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Railway Age

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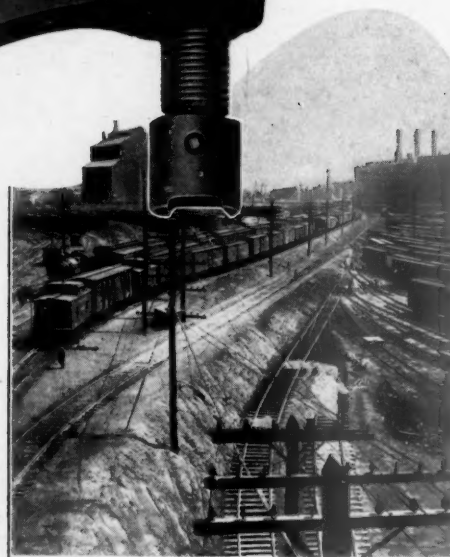


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EDITORIAL

Railway Age

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The orders placed for passenger cars in 1922 will exceed those for 1921. This is written the third week in January.

1922 Orders Exceed Last Year's

Rather early in the year, some will say, to make a prophecy of such far-reaching character. But not too early, because insofar as the Class I railroads are concerned the prophecy has already been fulfilled. The orders for passenger cars for service in United States placed during 1921 totaled 246, of which 207 were placed by the Class I roads. The passenger car orders placed by the Class I roads so far in 1922 total 222, already 15 more than last year's total. The orders represent one week's business and are reported in this week's Equipment and Supplies column. They include 127 cars ordered by the Chicago, Burlington & Quincy, 45 by the Chicago & North Western and 50 by the Long Island. But for the fact that the 1921 orders were so extremely small, one could say that the railroads in this country have placed the equivalent of a year's business in a single week. Unfortunately comparisons with 1921 do not mean much. Nevertheless, orders for 222 passenger train cars in one week set a good pace. It is as good as could be supplied when business was at its best in the good old times. Presumably, of course, the pace which January has set in passenger car business will not be kept up for the year, but that does not get around the fact that there are still a number of roads which have been asking prices on passenger cars and whose passenger car orders have not yet been let.

The Interstate Commerce Commission's proposed order for the installation of automatic train stops on prominent rail-

The Call for Automatic Train Stops

roads throughout the country (printed last week, page 189) will be of value chiefly as a starting point for discussion. It aims to bring to an end a period of controversy and experiments which has extended over 15 years, an aim which everybody must approve; every progressive railroad officer must wish to see this period of uncertainty brought to an end. The delay of 15 years since this subject was first broached in Congress has seemed intolerable; yet everyone must recognize that the underlying cause of delay has been the same in every quarter; the large and uncertain cost of an improvement which aimed at just one danger. But much progress has been made in the last 10 years, and automatic train control is now recognized as having possibilities of economy in operation aside from the narrow question of safety. The Chicago & Eastern Illinois has been using automatic stops for over eight years; and the commission will no doubt now call upon other roads to explain the causes of the differences between their views, or their standards, and those of the C. & E. I. (The C. & E. I. system is of the intermittent electrical contact or ramp type.) The commission has taken a wise step in declaring that the stage of preliminary experiment must be brought to an end and in preparing to open the way for the testing of other types. There is another condition, however, which the commission is in duty bound to terminate; the condition of doubt as to how this costly improvement is to be paid for. Under the Transportation Act, 1920, the commission can, in theory, improve the railroads' incomes to match their increased ex-

penses, but no one knows, as yet, how this theory is going to work out. The commission virtually commands these 49 railroads to spend, each, a very considerable sum for a radical experiment in safety. This and the numerous technical questions which have long needed a thorough airing will have to be thrashed out in the hearings which the commission no doubt will hold.

F. V. Russell, superintendent of operation of the Great Eastern Railway of England, who has just returned after travel-

Learning Railroading Abroad

ing some 25,000 miles inspecting the railways of the United States and Canada, is quoted by the Philadelphia Public Ledger as suggesting an interchange of railway operating men between the United States and England. Mr. Russell, the dispatch to the Public Ledger says, is of the opinion that England could learn from us in handling freight and that we could well study some of England's methods in transporting passengers. This conclusion seems logical enough. If some such arrangement could be worked out, much good might come of it. The proportion of our railway officers who seek to improve their knowledge of railroading by a study of methods in foreign countries is very small, perhaps smaller than that of any other country, and yet in some portions of the United States railroading has already become almost as intensive as it is in England. We should not, however, expect a group of American railway men to return from England with ideas which would revolutionize our methods overnight. We should rather expect that an inspection of English practices would provide information for the formulation of a far-seeing policy for future development in this country. The occasion of the International Railway Congress in Rome in April provides an additional incentive for American railway officers who are in a position to make the trip. At all events the matter is one worthy of consideration.

The railways have made extremely drastic retrenchments since the decline in business. Probably most of them have

Passenger Traffic and Passenger Service

saved as much money as they could in most ways. The statistics indicate, however, that they have not reduced expenses in one way as much as they could. The decline in passengers carried one mile in the first ten months of 1921, as compared with the first ten months of 1920, was over 19 per cent. There was practically no reduction, meantime, in the amount of passenger service rendered. The decline in passenger trains run one mile in the country as a whole was only 1.5 per cent. There was some curtailment of the number of passenger cars run in each train, but the reduction of passenger train car miles was only about three per cent. In western territory the decline of passenger traffic was almost 25 per cent, and this actually was accompanied by a very small increase in passenger train service. The difficulties in the way of reducing passenger train service are much greater than those met in reducing freight train service. The public usually complains about almost every reduction of passenger train service and often the consent of railroad commissions

to take off trains cannot be obtained. It is difficult to believe, however, that with such a large reduction of passenger business as occurred the railways could not have obtained the consent of the commissions to reduce passenger service substantially more than they have and satisfied the public that it was justifiable. It is true that during the war years there was much over-crowding of trains due to curtailment of the service accompanied by a large increase of travel, and that the railways since they were returned to private operation have been engaged in restoring the passenger service to normal. It seems plain, however, that during the last year more passenger service was rendered than general business conditions and the earnings of the railways warranted, and that this was largely due to competition between the railways. It is far better to reduce expenses by curtailing train service than by deferring maintenance. The former makes real savings, while the latter does not. Competition in service is desirable, but it ought not to be allowed to prevent real economies from being made at a time when maintenance expenses are being cut to the bone, and when, in spite of this, the net return being earned is wholly inadequate.

A newspaper which we had never seen before came to our offices last week. In size and subject matter it did not differ

The Pennsylvania News

greatly from the average small town newspaper. But in the excellence of its cartoons, illustrations and general composition it was the equal of most of our large metropolitan dailies. This paper was the first issue of the Pennsylvania News, a publication for the employees of the Central Region of the Pennsylvania Railroad. Every two weeks from now on it will be published and distributed among the employees of that region and, if we are any judge of newspapers, it will be eagerly read: First, because it is devoted entirely to news about those for whom it is intended and, second, though just as important, because it shows the skill of an able editor in the manner in which it is made easy to read by the use of cartoons, illustrations, careful writing, well selected type and other devices known to the schooled newspaper man. The News is a welcome addition to the large family of railway periodicals. We predict its success. Meanwhile those interested in employees' magazines will watch it with interest.

One oft-heard commentary on the movement toward deflation is that the reduction in the costs of raw or basic materials

The Conditions Are Most Favorable

is not adequately reflected in the prices of finished products. This complaint cannot be made with any degree of justice in the case of the steel fabricating industry. Inquiries for any appreciable tonnages in a form permitting of a fair amount of duplication in operations are sure to bring forth bids that represent an extremely small margin over current prices of the plain material. This may be explained only in part by unusually favorable arrangements between the fabricator and the mill. It must be accounted for very largely by minimum allowances for fabricating costs. Because of the relatively small amount of work being offered the shops have been compelled to make concessions to get the business. Obviously, this is a most favorable time for the contracting of steel bridge and building work and in the case of certain projects which have been dormant or only nominally in progress for a number of years, enormous savings have been accomplished through the deferment of this work until the end of the high price period. It is well known that the railroads have postponed a great many major railway bridge projects. In fact, very little work of first magnitude has been carried on for several years except such as had its inception early in the

war period. Work of this kind cannot be put off indefinitely and in view of the present favorable aspect of the structural steel market, a number of the railroads are reviewing their plans for the reconstruction of several large bridges.

The advantages of good light in railroad shops and engine-houses are readily apparent but in many cases seem to be overlooked. At least that is the impression gained by visiting a large

**Shop and
Enginehouse
Lighting Facilities** proportion of existing locomotive terminals and repair shop buildings. The walls and ceilings are black; smoky windows admit feeble rays of light; and electric lamps of small candle power are located at infrequent intervals high above the floor. An inspection of almost any modern manufacturing plant on the other hand will show exactly the reverse of these conditions and prove how great importance is placed on adequate lighting facilities. Increased production and more accurate work are made possible; accidents are far less common, and workmen are not only able but willing to apply themselves more diligently in proportion to the light and cheerfulness of their surroundings. These facts explain why many shop and enginehouse employees do not feel an excess of either ambition or energy upon entering their places of daily employment. The work is often unavoidably greasy and dirty and this disadvantage, combined with poor light and gloomy surroundings, is bound to have a depressing influence. How can conditions be improved? The proportion of window to wall space in existing shops and enginehouses is fixed and, while usually less than called for by modern practice, cannot be increased except at a prohibitive cost. There are many things, however, which can be done at small expense to admit more light and brighten up the interiors. The first step is to provide means for carrying off as completely as possible gas and dust from locomotives, furnaces, forges, or what not. The walls and ceilings can then be whitewashed with the assurance that they will remain white for a reasonable length of time and reflect the light admitted through periodically washed windows. Brightening up machinery and other shop equipment by painting it a light color has also been tried in industrial plants with good results. With careful attention to these details the best light which it is possible to obtain during the daytime will be available. On dark days and at night artificial light must be used and many shops are poorly equipped in this respect. Great improvements can be made in the better location of existing lights, the cleaning and rearrangement of reflectors or the provision of more powerful lights when necessary. It has been demonstrated many times in industrial plants and in some railroad shops and enginehouses that time and money spent on improved lighting facilities is a most profitable investment.

Recently an important building in one of the large railroad terminals required painting. The expenditure was authorized,

All That Glitters Is Not Gold

the money spent and after the paint was on the structure looked considerably more respectable than it had before. To all appearances a good job had been done economically. More recently, however, after only a few weeks in fact, it has come to light that neither was the job a good one nor an economical one. The building still appears to be painted, but what was initially paint now represents itself as powder, yielding to the touch. Manifestly something went wrong somewhere, but while inquiries, made for the purpose of finding out what the trouble was, are circulating about, this material must be removed and new paint applied—at a cost for removing of more than one-half that involved in the first

painting, together with an additional cost of repainting equal to that of the cost of the first painting. This, of course, is waste, not economy. Painting to be sure is a very ordinary occupation on every railroad and it is not surprising from the amount of painting done each year and the striking contrast which a freshly painted surface presents to the old surface, that men who are not painters themselves lose sight of the fact that anything at all will not do for paint and that any old way will not do for painting. The truth in the adage that "all that glitters is not gold" is particularly applicable to the painting problem. While railroads may ignore it they must eventually pay. Recognizing this, the officers upon whom any responsibility rests in connection with the painting on railroads should cultivate an interest in this work other than merely that of having it done, and will usually find it profitable to demonstrate occasionally by word or act an appreciation for whatever thought and skill the painters put into their work.

The Trend of Railway Construction

NUMEROUS INDICATIONS point to the resumption of construction work on a considerable number of roads next spring. Because of this fact it is pertinent to call attention to the gradual but steady transition from the extensive to the intensive development of the railway properties in recent years. This change will be particularly noticeable as work is resumed after the inactivity of the last three years. It is of special importance to the engineering officers of the railways, but hardly less important to those who sell construction equipment and to the contractors who specialize in railway work.

In the early days of American railway development, construction work was almost all of the extensive character—the construction of extensions and new lines. Even as recently as 15 years ago when the St. Paul and the Western Pacific were building to the Pacific Coast and other roads were constructing large mileages of branch lines, the work was principally of this character. This extensive work led to the formation of large contracting organizations which were prepared to handle the entire construction of lines several hundred miles long, including the grading, bridging and the laying of the track itself.

As the traffic has increased it has become necessary to revise the existing lines and to add to the facilities along them. While large areas still await railway facilities in this country, such widespread activity as was seen in 1906 has gone permanently. With the return of railway conditions to normal, branch line construction may be expected to increase materially. However, the great development of the future will be of an intensive character—the amplification of existing facilities. The trend of railway work in this direction is indicated by the following statement issued by the Atchison, Topeka & Santa Fe: "Railroad managements prefer to improve their plants for the efficient handling of the traffic offered, rather than to build new lines at this time to take care of business in various stages of development. A good deal of work will be done in the direction of improving roadbeds and terminal facilities, and possibly some short extensions will be made to round out certain properties, but virgin territory probably will have to wait awhile for transportation facilities."

In the conduct of intensive development work a new problem arises which is not present in the construction of new lines, namely, the necessity for the handling of traffic during the progress of the work. This necessitates a revision of methods. Much improvement work can be done most economically by making use of existing tracks and other facilities, and thus, potentially at least, disturbing regular traffic. The result is that the railways must of necessity exercise

much closer supervision over the construction work, and in many cases they are taking it over and performing it with their own forces, in order to avoid any division of responsibility. This tendency is increasing and it will bring the railways into the market for more construction equipment such as steam shovels, ditchers, dump cars, spreaders and concrete mixers, as well as a wide variety of auxiliary appliances.

Marked Improvements in the Railroad Situation

WHILE THE YEAR 1921 was the worst in railway history the changes in the railway situation which have been occurring within recent months afford grounds for optimism as to the future.

In spite of the fact that the total traffic moving is still abnormally small, the net financial results obtained by most railways within recent months have been better than they were a year ago, and much better than they were last spring. The net return earned by the railways is of the greatest importance not only to the railroads themselves, but also to the industries of numerous kinds from which they buy equipment and supplies. The record of many years shows that the volume of orders the railways place follows closely the net return earned by them, declining when it declines and increasing when it increases.

The traffic handled in November was smaller than in October, and the net return earned in that month was much less than in October. The net return earned in November, however, was almost \$70,000,000, or 30 per cent more than in November, 1920.

We have now complete statistics of earnings and expenses for 11 months of 1921. Probably the most outstanding feature of these statistics is the striking contrast presented by the net results of operation in the first six months of 1921, and in the next five months. In the first six months of the year the operating expenses consumed over 88 per cent of the total earnings, and the net operating income earned was only \$142,000,000, or at the annual rate of 1.8 per cent on the valuation made by the Interstate Commerce Commission. On the other hand, in the five months July to November, inclusive, the operating expenses consumed less than 76.50 per cent of the earnings, and the net operating income was over \$418,000,000, or at the annual rate of 4.72 per cent on the valuation.

The railways were making drastic retrenchments in maintenance in both periods. It follows that this marked improvement in the net results was due chiefly to real economies in operation. The statistics regarding the unit costs of labor, coal, materials, etc., support this conclusion.

The railway situation has been improved not only by the increase in the net return being earned, but by changes in general business conditions. There has been for months a steady increase in the amount of new capital seeking investment, and, in consequence, a decline in the general rate of interest. This decline in interest rates, as is always the case, is causing a rise in the market prices of stocks and bonds. The market prices of most railway stocks and bonds have largely advanced owing both to this improvement in underlying financial conditions and to the increases in net return being shown by most railways. Every increase in the market prices of railway securities brings nearer the time when the railways can market a substantial amount of new securities at reasonable prices. Their ability to market their securities at reasonable prices is, in turn, the main thing needed to enable them to increase the amount of equipment bought by them and the development work of other kinds done by them. One effect of the improvement in their financial condition which already has occurred is seen in the largely increased

orders for equipment and materials of all kinds which they have placed within recent months, and the additional large orders which are under consideration.

Whatever improves the railway situation is sure, by increasing the volume of purchases they make, to improve general business conditions because under normal conditions not only are their purchases vast, but they are made, directly and indirectly, from the producers of almost every class of basic commodities. Whether the railway situation will continue to improve will depend largely upon the policy of the Interstate Commerce Commission regarding rates and of the Railroad Labor Board regarding wages. It seems extremely doubtful, however, that the policies of these two government bodies will be such as actually to reduce the net returns now being earned. They must see that this would be contrary to the interest of the public itself. Furthermore, the net return now being earned, while much larger than in the first half of 1921, is still so small that probably the railways could defeat attempts to reduce it by appealing successfully to the courts upon the ground that it would involve confiscation.

On the whole, therefore, while the railway situation cannot yet be said to be satisfactory, it can be said that it is far better than it was a year ago and that all signs indicate that in respect to net return earned, to equipment and materials bought and to development work done by many railways, the record of the year 1922 will be far better than the record of the year 1921. The year 1921 was a year of positive retrogression in the railway field. The year 1922, in contrast, promises to be one of real progress. If, as appears probable, there shall be an increase in traffic and, therefore, in total earnings, the progress made toward normalcy will be not only real but substantial.

Probably the most significant feature of the general business situation is the large and general advance in the prices of securities of almost all kinds which recently has been shown on the stock market. A falling stock market almost invariably presages a decline in general business activity; while a rising stock market, such as the present one, almost invariably presages a general increase of production and commerce. A general increase of production and commerce would cause an increase of railway traffic; and a substantial increase of traffic in 1922 would do more than anything else could to restore the normal earning capacity and normal expenditures of the railways.

Many things remain to be done to make the railway situation what it should be; but the number of substantial reasons for hope regarding the future is greater now than for many months, and is constantly increasing.

New Books

Proceedings of the American Society for Testing Materials, 1198 pages, illustrated, 6 in. by 9 in. Bound in cloth. Published by the society, 1315 Spruce street, Philadelphia, Pa.

This volume contains the proceedings of the twenty-fourth annual meeting of the society which was held at Asbury Park, N. J., on June 21-24, 1921. It includes 32 reports on a wide variety of subjects, such as the heat treatment of iron and steel; the corrosion of iron and steel; preservative coatings for structural materials; coal and shipping containers. This volume also contains 93 tentative specifications which were submitted or revised at the 1921 annual meeting as well as five tentative revisions of A. S. T. M. standards. Following the reports and specifications there appear 24 technical papers including those on "A Proposed Method of Estimating the Density and Strength of Concrete and of Proportioning the Materials by the Experimental and Analytical Consideration of the Voids in Mortar and Concrete" by A. N. Talbot, and on "Wear Tests of Concrete" by D. A. Abrams.

Letters to the Editor

[The RAILWAY AGE welcomes letters from its readers and especially those containing constructive suggestions for improvements in the railway field. Short letters—about 250 words—are particularly appreciated.]

How to Reduce the Cost of Living

ALTOONA, Pa.

TO THE EDITOR:

One naturally hesitates to approach the unpopular and distasteful. As a member of that great body called "railroad labor" I am not entirely devoid of that hesitancy. We must, however, take the advice of the poet and

"be up and doing

With a heart for any fate,"

fully realizing the important part we must take in the necessary industrial readjustment.

The railroads have said to labor: "We must reduce your wages in order to meet the demands of the public for lower freight rates."

Labor has replied: "We will accept no reduction," following its refusal with a few arguments and some threats. Its leading argument deserves the most frank criticism. It is this: "Reduce the cost of living first and then we will accept a reduction in our wages." The same reply to this demand will apply to the wage question in all forms of industry.

As I see it, to bring about a general and permanent reduction in the cost of living, without first reducing wages, is just about as feasible as making the cart run along in front of the horse.

Railroad labor has received one reduction and, it must be admitted, that was not very large. Other business has probably suffered more. A lowering of the cost of necessities has followed, as the following figures, taken from my household records, will show:

	Cost	
	September, 1920	December 1921
Potatoes, per bushel.....	\$2.00	\$1.40
Bread, per loaf.....	.10	.08
Milk, per quart.....	.14	.11
Milk, per small can.....	.08	.05½
Coffee, per pound.....	.45	.28
Bacon, per pound.....	.50	.25
Lard, per pound.....	.22	.12½
Ham, per pound (whole).....	.35	.18

Many other items, showing like comparisons, are to be found in this record.

It is quite true that the lowering of these costs began before there was any actual reduction in the railroad wage, and continued without any reduction in freight rates at all. Wages in the productive industries, that is, those which produce the food, clothing and shelter, had already been lowered before there was any favorable change in the living costs. Other conditions possibly had some influence in this downward trend.

The last month in 1920 saw the beginning of the labor curtailment in this place; before the third month of the new year was spent the labor force was reduced to the point where only one man was working instead of three. This had the effect of reducing the public's buying power here to one-third of what it had been formerly.

This is true because here the railroad is the main source of employment. When it retrenches the other industries do likewise, because of their direct or indirect dependence upon it.

This sudden decrease in the people's buying power possibly had something to do with the reduction in the sales prices of our commodities, but it must be admitted that business

would not long survive with such forced methods alone. Any schoolboy can see that when goods are gotten ready for the market during the prevalence of high wages they must be sold at a figure that will pay for the labor of producing and getting them ready for and to the market, as well as paying interest on the money invested in the machinery and equipment used in producing and transporting them. If sold for less, someone loses. Then it follows that to reduce naturally and healthfully, there must first be a reduction in the cost of production. Labor is such a large factor in the production of every necessity, comfort or luxury that all other factors are comparatively dwarfed to nothing.

Take for example the coat I have on. It is made of wool and cotton. Labor housed the sheep, planted, cultivated, harvested their feed and fed them; labor sheared the wool from their backs, sorted, carded and spun it into threads; labor planted the cotton, cultivated, picked, sorted and drew it into threads; labor manufactured the dyes with which to color these woolen and cotton threads, and labor wove the two into cloth; labor cut and sewed this cloth into the garment; it was labor that produced the locomotives and cars with which to transport, and transported it over mountains and through valleys for hundreds of miles where I could get it. After labor, what else is there?

History will certainly point to the action of labor in this, the world's greatest readjustment period, and place the blame where it belongs, for these years' delay in the progress of civilized activities.

A. C. MYERS,
Clerk, Pennsylvania System.

Deferring Repairs a Costly Policy

NEW YORK

TO THE EDITOR:

Putting off the evil day—in no other terms can the deferred maintenance of roadway, structures, and equipment, now being practiced to an increasing extent by many railroads, be characterized.

The recent statistics of the principal railroads furnished by the Interstate Commerce Commission show that the net income is greater in most cases than for the corresponding period one year ago. In the face of a small reduction in wages and a very much greater reduction in gross earnings this is not exactly consistent, other things being equal. Right here is the point: other things are not equal, for there has been an enormous reduction in expenditures covering maintenance of roadway, structures, and equipment, and this answers the seeming paradox and explains the "improved" net income.

An analysis of the physical condition of passenger train cars operated by one of the larger railroads in December, 1921, as compared to December, 1920, clearly indicates the result of enforced savings due to deferred maintenance. The state of affairs indicated by the data shown in the following paragraphs is unquestionably typical to a greater or less extent of the situation in which many railroad managements now find themselves, not only in respect to passenger cars but more than probably in respect to freight cars, locomotives, buildings and structures, and roadway.

	1920	1921	Change 1921 Compared With 1920 Per Cent
Number of passenger train cars.....	880	865	.....
Average time out of general repair shop, as of Dec. 1.....	15.1 mo.	19.2 mo.	27.15 increase
Number of cars receiving classified repairs, for year.....	698	482	30.94 decrease
"Saving" due to deferred maintenance at \$650 per car.....		\$140,400	

Briefly the above data, based on 15 months between shop-
pings, which is considered about the correct length of time

by most mechanical officers and which was approximately in effect up to and including 1920 on the road in question, shows that the general mechanical condition of passenger equipment has deteriorated 27 per cent at the cost of a "saving" of 31 per cent due to deferred maintenance.

If there is no way found during the year 1922 to spend more money for maintenance than was spent in 1921 an analysis, as above, at the close of 1922 will show the following interesting conditions:

	1920	1922	Change 1922 Compared With 1920 Per Cent
Average time out of general repair shop, as of Dec. 1.....	15.1 mo.	23 mo.	52.3 increase

This shows a situation bordering on the absurd and it is obvious that there must be a decided change for the better and that it must be very soon.

To restore the physical condition of passenger cars during the year 1922 to that condition prevailing during 1921, all of the cars owned will have to be overhauled and the average cost will undoubtedly be 20 per cent higher per car than the estimated cost, \$650, shown for 1921, due to the general condition of cars being much worse than it was one year ago.

On this basis, the cost of one year's deferred maintenance on passenger cars would be:

Cost of overhauling cars for 12 months	
1920—698 cars at \$650 each.....	\$453,700
1921—482 cars at \$650 each.....	313,300
1922—865 cars at \$780 each.....	674,700

Deferred maintenance of passenger cars during 1921 made possible a "saving" of \$140,400, but to restore their physical condition to normal, if it is done during 1922, will mean an expenditure of \$221,000 more than that of 1920, and \$361,400 more than that of 1921.

This gives a fairly accurate index to what can be expected in the way of added cost due to putting off necessary repair work until some future time.

The sooner means can be found to enable the roads to catch up on deferred repairs, the less evil, of course, will be the day when the process starts.

Lurking in the shadows of the background of the present unfavorable maintenance situation is the haunting fear of possible accidents which might conceivably result from causes traceable to less-than-standard maintenance conditions of rolling stock or roadway, and it is not too much to say that conscientious railroad men are fervently looking forward to the time when the evil day will have to be postponed no longer.

M. S. ROBERTS.

A CONTRACT has been awarded by the Chicago region of the Erie to the A. S. Hecker Company, Cleveland, Ohio, for the maintenance of track and the protection of highway crossings on the Chicago, Marion and Cincinnati divisions. According to the plan provided in this contract all the track foremen, track laborers and crossing watchmen have been released from the service of the railroad company and are now employees of the A. S. Hecker Company. Circular issued by the railroad covering this arrangement is as follows:

"Effective January 1, 1922, the maintenance of track and protection of highways on the Chicago, Marion and Cincinnati divisions of the Erie Railroad Company will be handled by the A. S. Hecker Company, contractors, of Cleveland, to whom a contract has been awarded, covering all work incidental to track and crossing operation.

"All track foremen, track laborers and crossing watchmen will be released from the service of the railroad company, effective at midnight of December 31, 1921. All employees desiring to continue work in the employment of the A. S. Hecker Company will be given a chance to signify their intention to a representative of the A. S. Hecker Company on December 31, 1921."

The Chilean Railroad Problem and Its Solution

Electric Operation Will Increase Track Capacity, Lower
Operating Costs and Improve Service

By David C. Hershberger

General Engineer, Westinghouse Electric & Manufacturing Company

THE TRANSPORTATION system has a particularly vital influence on the development of Chile, because of the peculiar location of the natural resources of the country. Located between the summit of the Andes and the Pacific Coast, Chile occupies a domain 2,600 miles in length from north to south and varying in width from 60 to 280 miles. While there is considerable coastwise steamer traffic, especially in the northern part, the railroad system is the main artery of transportation serving the central and southern sections of the nation.

It is essential that this system be kept up to the most



Express Train at Til Til Drawn by a Baldwin Locomotive

able could be used profitably not only for industrial purposes, but for the operation of the railroad transportation system as well.

modern standards in order to serve the country adequately and efficiently. To attain this objective, the government of the Republic of Chile has undertaken the most extensive electrification in progress at this time. This procedure is in strict accordance with the well known progressive policy of our southern neighbor.

The urgent necessity for electrification was brought to the attention of the government during the world war by the congestion of traffic in the first zone. This zone comprises the section of the line between Valparaiso and Santiago, and the branch from Las Vegas to Los Andes. The Valparaiso-Los Andes section forms a part of the transcontinental system to Argentina, the Transandine Railroad continuing eastward from Los Andes. During this congestion, which occurred in 1917, the steam locomotives used in this zone were of relatively small capacity, which necessitated the operation of a large number of trains in order to move the freight tonnage and handle the passenger traffic. The lack of adequate motive power caused a congestion of traffic which was rapidly approaching the capacity of the line. It was at one time considered necessary to lay a second track on a considerable portion of the line in addition to that which was already double tracked. The 1917 congestion was relieved to a considerable extent several years ago when 20 Mikado type steam freight locomotives were put in service in the first zone.

Chilean engineers and business men have recognized for many years that the tremendous amount of water power avail-

able could be used profitably not only for industrial purposes, but for the operation of the railroad transportation system as well.

In 1918 a commission consisting of Rafael S. Edwards and Ricardo P. Solar was appointed to prepare a report on the electrification of the broad gauge lines which extend from Valparaiso southward to Puerto Montt. These lines are divided into four zones. The first zone has been described, and the others extend southward in numerical order. The commission completed its report covering all four zones in 1918, and the decision to electrify the first zone followed, as a result of the economies and advantages set forth in this report.

The specifications required the bidders to supply not only the electrical equipment, but to execute the construction work as well, and to turn over to the government ready for operation the complete electrification. These stipulations make it necessary for the bidders to construct the substation buildings and erect the overhead contact lines complete.

The contract for this large undertaking was awarded to Errazuriz, Simpson & Company. This company will execute the construction work while the electrical equipment will be supplied and installed by the Westinghouse Electric International Company. The former company is a well-known Chilean firm which has completed important engineering work in Chile. In addition to conducting a large



View of the Double Track Section, Looking East from Ocoa

importing and exporting business, this company markets in Chile the electrical apparatus of the Westinghouse Electric International Company.

Track and Roadway

Electrification will change the complete status of the railroad as to track capacity, as the flexibility of electric transportation is such as to provide not only the possibility of trebling the traffic of the road, but of going to much greater limits if necessary.

The extensive electrification which has been undertaken comprises a complete steam engine division—a distance of

116 miles between Valparaiso and Santiago, and 28 miles between Las Vegas and Los Andes. From the port of Valparaiso the railroad skirts the bay of the same name nearly to Miramar, and then passes through Vina del Mar, a famous summer resort and exclusive residence district. After crossing a low coast range the line follows the Aconcagua River to Las Vegas through the fertile valley in the Quillota district.

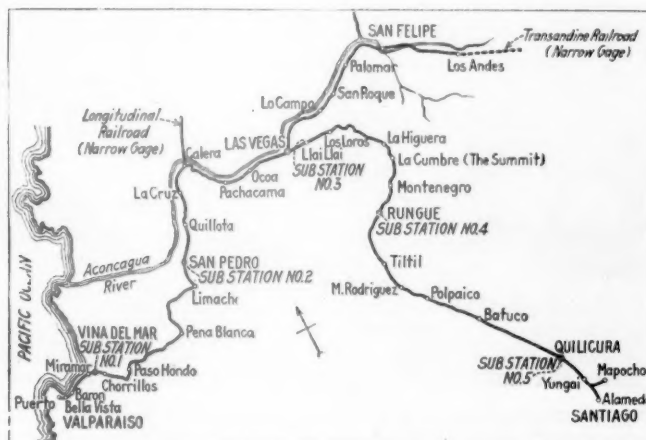
At Calera, the Longitudinal Railroad starts northward to Antofagasta and Iquique, while at Las Vegas the Los Andes branch leaves the main line. Llai Llai, located approximately half way between Valparaiso and Santiago, is the meeting point for all passenger trains making connections with the Los Andes branch trains. At this point the heavy grade section over the mountain begins, and ends near Batuco on the eastern side of the mountain range.

The curvature, considering the entire line, may be considered to be of medium severity. Starting from Puerto, the line circles the bay to Miramar and has considerable curved track over the low coast range and along the Aconcagua River. The most severe curves are located on the section of the line between Llai Llai and Til Til. The maximum curves are ten degree and are located near Los Loros. On the eastern slope the maximum curve is 9.5 degrees located near San Ramon. The line between Batuco and Quilicura is practically level tangent track.

The road is double tracked between Valparaiso and Limache, a distance of 27 miles; between Ocoa and Llai Llai, 8 miles, and between Yungai and Mapocho Station, a distance of $1\frac{1}{2}$ miles, making a total distance of $36\frac{1}{2}$ miles of double track line. The track is 5 ft. 6 in. gauge, laid on Chilean oak ties and is rock ballasted for practically the entire length of the line in the first zone. Eighty-five pound rails are used between Llai Llai and La Cumbre and between Calera and Ocoa. The rest of the line between Valparaiso and Santiago is laid with 80 pound rails, while the branch to Los Andes is laid with 75 pound rails.

The track is well maintained. Due to the absence of severe cold weather, the sub-grade is not subject to alternate freezing and thawing. This condition contributes to the low track maintenance costs. The wheel loadings will be such

the six tunnels. The first three tunnels are located on the Tabon or maximum grade section between Llai Llai and La Cumbre. All the tunnels are dry except San Pedro, so that the problem of corrosion of overhead material is not serious. The clearances from rail to roof do not seriously interfere with the design of the overhead material or the locomotives. The smoke conditions in these tunnels are a detriment to providing the best working conditions for the train crews and traveling service to the public. The elimination of these con-

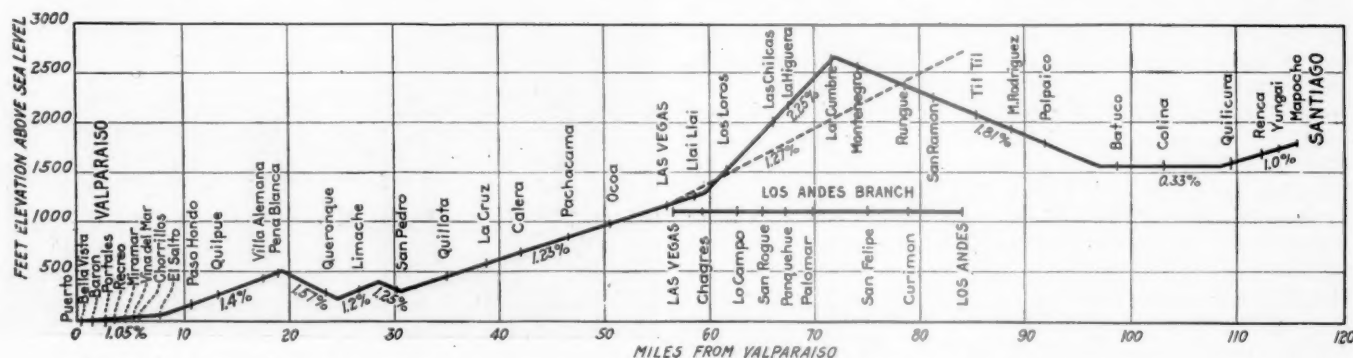


Map of Zone Being Electrified

conditions by electric operation constitutes an important improvement in operation.

The grade conditions have always been an obstacle in the way of moving, advantageously, the traffic in the first zone. It has been necessary to maintain several helper sections to handle the freight traffic, while practically all passenger trains require helpers ascending the Tabon grade between Llai Llai and La Cumbre. With electric operation all helper service will be eliminated, except in connection with the freight trains ascending the Tabon grade.

The condensed profile gives a general idea of the grade



Condensed Profile of the First Zone of the Chilean State Railways to Be Electrified

that with most of the locomotives, though much more powerful than the steam locomotives being replaced, the duty on the track from static loading will be less than that with the steam locomotives.

The largest bridge is that over the Vina del Mar River near Valparaiso, known as the Las Cucharas Bridge. This is a steel structure of the cantilever type, 440 feet long and carries two tracks. There are a number of girder type bridges, the longest of which is 250 feet in length.

There are six tunnels on the main line, namely: Los Maquis, Los Loros, Centinela, San Pedro and the two Paso Hondo tunnels, the latter being located on the double track section. San Pedro is 1,600 feet in length; the longest of

conditions. The maximum grade, which is 2.25 per cent, is located on the Tabon between Llai Llai and La Cumbre, the summit. This is the most severe grade in the first zone and forms the major part of the twelve mile grade. The summit has an elevation of 2,600 feet above sea level. The maximum grade on the eastern slope is 1.81 per cent and is located near San Ramon. The elevation of Santiago is 1,800 feet, so that the most severe hauling conditions are south bound, or toward Santiago.

To provide for increased traffic under steam operation would require heavier locomotives than those in service at present which would probably necessitate the installation of heavier rails. This in turn would involve a relatively large

expense, and the maintenance expense would increase proportionately.

The change to electric operation permits of increasing the tonnage tremendously without the necessity of changing rails, by reason of lower track stresses, even with engines of greater power than those in service at the present time. The more efficient use of the trackage by electric operation due to being able to handle not only a greater number of trains, but a greater tonnage per train, is an extremely important con-



Puerto Station, Valparaiso. The Station Building Is on the Right

sideration. For equal tonnage the track maintenance will be less with electric operation than with steam.

The Fuel Situation

While it was realized that the problem of traffic congestion could perhaps be solved by the use of larger and more powerful steam locomotives, it was further recognized that steam operation would not solve the fuel problem. This problem has two serious phases; first, the cost of fuel; and second, the partial dependence upon imported coal.

The railroad fuel bill has in the past few years reached excessive figures due to the high price of coal. The price of coal in Chile is governed, not by the price of coal mined in Chile, but by the price of imported coal, much of which in the last few years has come from the United States. To the cost of the coal must be added ocean freight transportation, and lighterage charges, so that before the war the cost varied from \$7.00 to \$10.00 per ton for imported coal of good quality. During the war it is understood to have risen as high as \$25.00 to \$28.00 per ton, while more recently the price has ranged from \$15.00 to \$20.00 per ton.

The price of Chilean coal has been slightly less than these values, but it is readily seen that with the almost unlimited hydro-electric power available, sold at a reasonable rate, the electrification program is not only justified, but is the solution of the fuel problem from the cost standpoint. The further energy economies made possible with electric motive power by the reduction of standby losses in freight, passenger and switching service, and as a result of the energy returned to the line by regenerative electric braking, are not to be ignored.

The elimination of transportation of fuel for railroad use not only releases this car and locomotive equipment for hauling revenue freight, but will assist in supplying needed rolling stock for the transportation of products of the South. The railroads in the past have been embarrassed seriously at times due to inability to obtain sufficient coal for their operation at times of labor troubles in the Chilean mines, as well as from other causes. At these times it has been necessary to curtail the service with the consequent inconvenience to the traveling and shipping public. By the use of hydro-electric power for transportation, this situation will be entirely relieved and the nation will be wholly self dependent.

Present and Future Freight Service

The southbound tonnage consists largely of imports such as coal, merchandise, machinery, automobiles, food products, etc. Part of this tonnage results from the coastwise steamer traffic in handling the transfer of products of the nation from one point to another.

The northbound traffic is composed largely of agricultural products such as wheat, corn, rye, potatoes, alfalfa, tobacco, beans, fruits of all kinds, dairy products, wool, wine, live stock, coal, copper and lumber from the great forests of the South. Much of this tonnage is destined for the central and northern sections of Chile, while a considerable part of it is exported to other countries.

The principal exportation in the past has been nitrate of soda and copper. Large quantities of iodine, borax, sulphur, salt and iron ore are also exported.

Freight tonnage southbound from Valparaiso averages approximately 3,600 gross tons daily in normal times, while that passing Las Vegas in the same direction is 3,900 tons. The northbound traffic is only slightly less than that of the southbound.

At present, the freight trains going toward Santiago are made up of 20 to 30 cars each, or a trailing load of 550 tons. These trains are hauled by Mikado type steam locomotives assisted by a Borsig Consolidation between El Salto and Pena Blanca and on the Tabon grade. In the opposite direction a helper locomotive is used between Til Til and Rungue.

With electric motive power 770 ton trailing loads will be hauled by one locomotive in either direction, except in ascending the Tabon grade a helper will be used. The trailing weights will be increased 40 per cent and the number of trains reduced approximately 28 per cent.

The locomotives employed for this service will weigh 113 tons and have a nominal rating of 1,680 hp. At this rating the speed will be 22.6 miles an hour, with a tractive effort



Las Cuchuras Bridge Spanning the Vina del Mar River near El Salto

of 27,950 pounds. These engines will be of the Baldwin-Westinghouse design with 0-6-0 + 0-6-0 wheel arrangement. The two three-axle trucks will be connected by a Mallet hinge and all the buffing strains will be transmitted through the underframing. The maximum speed of these engines will be 40 miles an hour.

Electro-pneumatic control will be used for the control equipment, so arranged as to provide for regenerative braking. A motor generator set will supply current for separately exciting the motor fields in regeneration.

Westinghouse EL air brake equipment will be used. It has the straight air feature for control of the engine and automatic air for control of both the locomotive and train.

The Westinghouse air brake has been the standard air brake equipment of Chilean railroads for many years.

A considerable reduction in running time will be made by the freight trains. Through freight trains that now make the one-way trip in 10 to 12 hours will be capable of going through in six to seven hours. With the faster schedules the crew expense will not only be less, due to the reduction of time on the road, but fewer locomotives will be required to handle the service, on account of the shorter running time. The increasing of the freight train trailing loads alone will result in reducing the number of trains and the crew expense by approximately 28 per cent on the basis of present traffic.

Helpers Will Be Eliminated in Passenger Service

Under normal conditions the express passenger trains carry six to ten cars, or a trailing load of 200 to 300 gross tons in either direction between Valparaiso and Santiago. Occasionally these trains are composed of as many as 16 cars, and helpers are used on the Tabon grade. The express passenger trains are for the accommodation of first and second class passenger traffic and are the fastest trains in the service, making only a few stops in the 116 mile run. The omnibus trains which make all stops between Valparaiso and



East Portals of the Paso Hondo Tunnel

Santiago are always the most heavily loaded passenger trains in the service and carry cars for the accommodation of first, second and third class passengers.

The electric locomotives will be capable of hauling the 300 ton trains in either direction without the aid of helpers on any section of the line. These locomotives will have a nominal rating of 2,250 hp. corresponding to a speed of 37 miles per hour at a tractive effort of 23,400 pounds. They will weigh 127 tons and will have 105 tons on the drivers. The wheel arrangement will be 2-6-0 + 0-6-2, a two-wheeled guiding truck being used at each end of the locomotive.

The two three-axle trucks will be connected at the inner end by a drawbar held in tension spring buffers. These locomotives will be capable of making a maximum speed of 62½ miles per hour. The cabs will be very similar to the freight engine cabs and will carry virtually duplicate control equipment.

Local passenger trains are operated between Valparaiso and Llai Llai and intermediate points. At present many of these trains carry ten cars between Valparaiso and Vina del Mar, while the locomotive ratings provide for a maximum of 12 cars per train. These trains are composed of first, second and third class cars, usually hauled by one locomotive as this section of the line does not have the most severe grade conditions.

The new motive power for this service will consist of 80-ton double truck locomotives having the inner ends of the trucks connected by a Mallet hinge. The wheel arrangement will be 0-4-0 + 0-4-0. Each of the four axles will be equipped with a direct geared motor the same as the express passenger locomotives. The engine rating will be 1,500 hp. corresponding to a tractive effort of 15,600 pounds at a speed of 37 miles per hour. The maximum speed of these locomotives will be 56 m.p.h. The profile over which these locomotives will operate does not justify the use of regenerative electric braking so that this feature will not be included in the design. These engines will be required to haul trains of 260 to 350 tons on the local runs, including the 300 ton trains of the Los Andes branch.

In the interest of improving the service, faster schedules are desirable. These cannot be obtained with the present steam equipment and in fact with heavy traffic the present time tables are maintained by double-heading on the grades. With electric operation it is proposed to reduce the running time of the fastest passenger trains between Valparaiso and Santiago from three hours and forty minutes to three hours and fifteen minutes, or a twenty-five minute reduction in running time. The way passenger, as well as the local trains will also operate at higher speeds, with a consequent reduction in running time.

The switching will be performed by 65-ton double truck locomotives. These locomotives will have a rating of 480 hp. or a tractive effort of 15,600 pounds, at a speed of 11.6 m.p.h.

Locomotive Maintenance and Renewals

The maintenance of the steam locomotive equipment is of a high order on the State Railways. Many of the executives of the State Railways have had foreign experience in railroad shops of the largest systems in the United States and England—a number at the Altoona shops of the Pennsylvania.

Repairing of electric locomotives does not present a difficult problem to the railroad as the present shop equipment is, with the exception of a few items, adequate to handle this work. High grade skilled labor is available so that with a certain amount of training, covering the care and maintenance of electrical equipment, this work can be handled readily.

Chile has purchased most of her modern locomotives in the United States. However, a number have been and are now being reconditioned in her shops, while in the past some have been designed and built there entirely. It is apparent that the wisest course is that of investing in locomotives which will give the longest life in order to avoid frequent foreign purchases. The electric locomotive fills this requirement and has the added advantage of being ready for service a greater percentage of the time than the steam engine.

In some respects the purchase of electric motive power can be regarded as being part of a program of normal renewal of motive power equipment in view of the necessity of purchasing more steam locomotives to replace obsolete types and provide for increasing traffic.

The maintenance and operation of water stations involves a considerable expense. Furthermore, the loss of time at these stations by the trains represents an additional loss with steam operation that will be eliminated by the new system of operation. Many of these water stations require the maintenance of pumping stations, which represents an added expense.

All steam locomotives are coaled by hand rather than by automatic coaling stations, so that this expense is considerable. The elimination of these stations will make available additional yard trackage.

With continued steam operation it would have been necessary to have invested in a number of new enginehouses.

This expense is now eliminated, due to the fact that much less space is required by the use of a fewer number of locomotives to handle the service.

Energy generated by hydro-electric plants will be purchased by the railroad for the operation of its trains. One of these generating stations is now in course of construction by the Chilean Electric Tramway and Light Company, Ltd., and known as the Maitines station. From this station, the power will be carried to the receiving station at Santiago and on through to Valparaiso by 110,000 volt transmission lines. The end substations will be served by 1,200 volt transmission lines, while the three intermediate stations will receive their power from 44,000 volt transmission lines fed through step-down stations from the 110,000-volt lines.

Each of the five railway substations will contain two 2,000 kw. motor generator sets. The sets will supply the overhead lines with direct current at 3,000 volts.

The climatic conditions are remarkably favorable to the successful operation of electrical equipment with the possible exception of that part of the line located along the seashore which requires consideration on account of the salt air from the ocean. The rainfall is limited in this district and snow is unusual. In the summer season the air temperature is high in the daytime, due to intense sun, while the nights are always cool due to the cool air from the Andes Mountains.

Storms are almost unknown except by the seashore. The wind velocity is very low, especially in the Los Andes branch district. Even lightning is infrequent, and is not severe in the district of the first zone.

It may be said that the electrification of the first zone of the Chilean State Railways solves most, if not all, of the serious operating problems of this section of the system. The advantages to be gained by electric operation are:

- (1) An increase in the capacity of the present trackage to provide for future increase in traffic:
 - a. Faster schedules.
 - b. Heavier trains.
- (2) A reduction in operating expenses by reducing:
 - a. Fuel costs.
 - b. Locomotive maintenance costs.
 - c. Crew costs.
 - d. Elimination of coaling and watering stations.
 - e. Reducing track maintenance costs.
- (3) Provision for motive power and rolling stock additions and renewals.
- (4) Better traveling conditions.

The full realization of all the operating economies will be attained when the entire system is electrified so that all advantages can be taken of the characteristics of electric motive power.

W. G. Bierd Opposes Regional Board of Adjustment

IN A LETTER setting forth the reasons why the Chicago & Alton is not willing to join in the support of the Train Service Board of Adjustment for the western territory, W. G. Bierd, president of the road, has presented forcibly the position of railways that are opposed to such boards. He proposes that, if the present committee system of the road is not satisfactory to the employees, all committeemen of the railway itself be called in and a board for the road itself be organized to which disputes shall be referred regarding which the local and general committees and the management cannot agree.

The principal reasons why the management of the road is not willing to become a member of the regional board of adjustment are stated to be that, first, it is impossible for any board whose members are not employees of the company to dispose of disputes in as equitable a manner as can a committee composed of employees of the railroad, and second, "these boards of adjustment, labor boards, commissions and committees, other than our own employees and officers serve only to further separate the management and the employees

and bring about misunderstandings instead of perfecting understanding."

Mr. Bierd's letter reads in part as follows:

"We believe it impossible for any board whose members are not employees of the company to be as familiar with the conditions surrounding disputes that may arise between the officers of the company and your organizations as would a committee composed of employees of the Alton railroad, or be as able to dispose of such disputes in as equitable a manner. I fully agree with you that such minor disputes as do arise should be referred to the United States Railroad Labor Board for decision only as a last resort, and as you are well aware, it has been our policy, both through the Railroad Administration period and at the present time, to settle these matters ourselves and not refer them to any board. In fact, only three or four submissions have been made since the beginning of government control.

"However, the principal objection of the officers of this company is that these boards of adjustment, labor boards, commissions and committees, other than our own employees and officers, serve only to further separate the management and the employees and bring about misunderstandings, instead of perfecting understandings. Therefore, the officers of this company are opposed to every form of board of adjustment that lodges our own misunderstandings with any body of men other than Alton officers and Alton employees, for no set of men, no matter who they may be, can deal with these subjects as fairly, intelligently and honestly as the employees and officers themselves.

"We are equally opposed to the principle of the Labor Board because that board has also helped to pull apart the officers and employees of the railroad, and it will always be so as long as there are such boards foreign entirely to the railroad company itself. No matter what board may pass upon these matters it cannot be properly informed and cannot pass upon them as intelligently, as fairly and as honestly as the management and the employees can through the regular channels that have been built up during the past 25 or 30 years, namely, the proper practical operating officers and the proper practical men who form your committees. If we cannot agree fairly and justly, then an entire stranger, foreign to our interests, cannot decide such questions intelligently.

"However, we have the Labor Board. It was created by law and we cannot control that situation. Therefore, we must accept it, and in doing so we accept every ruling of the Labor Board cheerfully and fairly and try to carry them out honestly and intelligently. We are trying to give the Labor Board just as much assistance as we can in order that it may be just as successful as possible. Therefore, since we must have the Labor Board and pay the cost of handling these matters before it, we should confine ourselves strictly to it. Surely the employees have paid a very severe tax for these large meetings, committees and conferences that have involved hundreds of men during the past four years and still are continuing, but we should take absolutely no cases to the Labor Board or any other board that we can work out ourselves and we should not create another board of adjustment to still further confuse the situation and make matters worse.

"In our opinion these boards have been the most harmful influence for the railroads and their employees that has developed during the past four years, for they have only helped to pull the management and the employees apart and to create bad feeling between the two classes of men who must work and should work closely together, and as a result have destroyed the good service built up in years past.

"We understand clearly that there must be some proper means of adjusting these disputed questions and we believe that on a road of our size where the general officers can be in constant touch with the employees and where the employees have an open door to come to the general officers at any time

and in any way, the employees and the management will be best served and best satisfied to handle these subjects with our own committees constituted as they are. We can know and understand the rules better than any board of adjustment and can settle such disputed questions more fairly and more honestly to all concerned than a body of strangers who have no particular interest in the Alton railroad or its employees.

"It is the belief of the officers of this company that nothing will help the present disturbed condition more than to get back to the point where the management and employees will deal with each other face to face across their own table. Therefore, we believe that the recently created board to which you refer is unnecessary and is not good for the employees or the management of the Alton railroad.

"The officers of this company believe we will best prosper by handling these matters as we now handle them. However, as above stated, we also recognize that it has become a belief that there must be a practical board to hear such disputes where the committee and management cannot agree. While this is not our view, if you and the employees you represent believe there should be such a board, then we want to join you, with all other committees and employees of the Alton railroad and create a board of our own—of Alton men and for Alton interests—which will be far better than a board of strangers or people far removed from our interests. If such a board should fail, as I think it would seldom do, the case could be submitted to the Labor Board as the law makes it possible for either side to do."

Commissioner Potter Expresses Views on Rates and Wages

THAT FREIGHT RATES are too high and ought to be reduced immediately but that there does not appear to be any possibility of a proper reduction in the near future or until railroad operating costs are reduced, is the opinion expressed by Mark W. Potter, of the Interstate Commerce Commission, in a letter dated December 22 to Philip S. Tuley, president of the Kentucky Manufacturers' Association, who has made it public in a bulletin.

Mr. Tuley had asked Mr. Potter to comment upon a resolution on the subject of transportation adopted by the association. The commissioner's letter was in part as follows:

Excepting only that part of the resolution which favors abolishing the Railroad Labor Board and delegating to the Interstate Commerce Commission jurisdiction over wage rates, I am in entire accord with the sentiment of the resolution. I have not permitted myself to arrive at final opinions as to whether the Railroad Labor Board should be abolished, or as to what, if any, jurisdiction should be given to this commission over wages. Aside from the fact that I have not permitted myself to become committed in my own mind on these questions, it is obvious that propriety should impel me to withhold an expression of my views regarding them.

There is no question in my mind but that freight rates are too high. The welfare of the country demands that they be reduced promptly. There should obtain in this country a constant tendency of freight rates to reduce. This should be the natural result of increasing efficiency, increase of business, expansion of industrial development of the country and the promotion of a proper relation between railways. The increases in recent years are fundamentally abnormal and unsound as permanent adjustments. They must be eliminated before the country can go back to normal and continue its onward movement. There will not be a sound and permanent resumption of prosperity and healthy industrial and commercial activity under the present scheme of freight rates. They ought to be reduced and be reduced immediately. Unfortunately there does not appear to be any possibility of a proper reduction in the near future. I do not see how the reduction which the welfare of the country so urgently demands can be accomplished until operating costs are reduced. To a considerable extent the railroads are in no position to control their costs. The right and power to deal with labor which is the most important element of operating costs has been taken away from the

carriers. The Congress has determined that wage questions shall not be handled in the manner that they are handled in ordinary industrial enterprises. The hands of the carriers have been tied by the law which prescribes the manner in which railway wage adjustments and determinations shall be brought about. The jurisdiction has been taken over by the Railroad Labor Board, a governmental agency. Unless and until that Board acts, the carriers are going to be helpless and can not be blamed for not making those rate reductions which a wage reduction would permit. With a scale of wages paid to railway employees universally known and recognized to be higher than the scale which obtains in other industries, with costs of living substantially reduced, there seems to be no prospect of getting the problem of wage adjustment before the Labor Board for determination for several months to come. If the carriers are not to be allowed to handle their own labor problems—if the law of supply and demand is not to apply to railroads as it applies to other industries—the shipping public, it seems to me, must pay the price for the system which their representatives have established by the controlling law, and be patient until the government agency which has the power sees fit to exercise it.

Railroads Should Be Run for People as a Whole

I am perfectly clear on one question and that is that the railroads of the country exist and should be run for the people as a whole and not for the employees. The people as a whole have the right to have the railways run on a scale of wages which will permit a scale of rates which industry can afford to pay provided men can be found to run the roads upon that basis. Rates which the shipping public can afford to pay should be made the basis of determination of wage scales and preferential wage determination should not determine rates. The interests of the 100,000,000 people are supreme and should not give way to the demands of the 2,000,000 merely because those demands are backed by threats of distress to the nation if they are not acceded to. Just now the thought in some high places seems to be that what is a proper wage is the first question to consider and that rates are a secondary consideration. The first thing to do is to bring about a sound fundamental basis on which to consider these questions. In my judgment, it is the province of the Interstate Commerce Commission to determine what rates industry can stand and that determination should be accepted as a basic factor in determining what wages the railroads can afford to pay. The thought of the Railroad Labor Board apparently is that the basic question is as to what wages should be paid and that this commission must accept that determination as a basis for fixing rates. I do not venture an opinion as to whether the Labor Board should be abolished and I am sure this commission does not want any more burdens thrown on it, because it now has more than it can do. I do say, however, that the present system by which the labor board and our commission operate independently upon the same subject matter has caused and is sustaining a hybrid system of regulations barren of satisfactory results.

The Justification for Unions

What I have said above is said by one who is friendly to labor and a believer in the principles of labor organization. I would be the last to contend that in the past labor has had its fair share of what the public pays for the products of the joint activities of capital and labor. I want to see a gradual improvement of the status and conditions of employees in all industries.

It should be borne in mind too that the principles of labor organizations are justified in so far as they advance and protect the interests of labor generally, and deal fairly with all classes of labor. No particular class of employees has the right in the name of labor to use labor organizations for the benefit of the few, and against labor generally, by demanding high wages for the few, which repress industry generally and throw many more millions of laborers out of employment. The position recently taken by certain classes of employees has injured employees generally more than anything else. A few are insisting upon profiting at the expense of the many. This, it seems to me, is a prostitution and a misapplication of the principles of labor organization. Just how long labor generally and the public are going to stand for this is an interesting question. One of the troubles that I see is due to the fact that labor has been led or misled into taking arbitrary positions without consideration or regard for the interests of others who are involved. Neither owners nor employees have the right to be arbitrary. The Railroad Labor Board was created as a protection to employees, employers and the public. It is the tribunal which the law has created to guard them all. When labor leaders refuse to utilize that tribunal and threaten nation-wide strikes and national distress, if they are required to follow the procedure which the law provides, I am suspicious of their confidence in the merit of their claim.

Results of the National Perfect Package Campaign

THE AMERICAN RAILWAY ASSOCIATION and the American Railway Express Company, which jointly conducted the national perfect package campaign during the month of November, 1921, have prepared a 16-page pamphlet telling of the results of that campaign as compiled from the reports of 1,294 participating cities and towns. It is generally believed that the good effects emanating from this effort to improve the packing and handling of packages cannot be measured in dollars and cents, nor entirely by the large number of irregularities which were corrected at the

month 92,165 packages were refused acceptance by the Bureau's inspectors and returned to the shippers to be re-coopered and repaired. This totaled 150 per cent more package refusals than recorded by that bureau during the previous month, and, according to freight claim representatives, it is a fair indication that closer supervision of this sort had been long needed. In addition, shipping and receiving clerks, as well as the shipping public, obtained an intensified education in the requirements of the freight classification. Propaganda, in the form of circulars and pamphlets, articles in the newspapers and trade journals, as well as numerous lectures, have all helped to provide for the establishing of an efficient freight and package handling system which had been greatly deficient before. It is felt that

TABLE 1—TABULATION OF IRREGULARITIES

	Freight	Per cent	Express	Per cent	Total	Per cent
Number of errors discovered in bills of lading or express receipts.....	25,965	28.0	45,406	56.7	71,371	41.0
Number of errors discovered in marking shipments.....	46,590	50.2	22,395	27.9	68,985	40.0
Number of other defects discovered in packing or packages.....	20,168	21.8	12,329	15.4	32,497	19.0
Total.....	*92,723	100.0	*80,130	100.0	*173,853	100.0
Percentage of shipments received without exception.....	Freight 98.91%		Express 99.26%	Freight and express combined 99.10%		

point of shipment. However, the country-wide interest attracted to the importance and necessity of starting shipments right—well packed, in adequate containers, and correctly marked—has amply repaid those who have helped to make the work a success.

The campaign is considered to have developed broader and more cordial relations between shippers and carriers. This is evidenced by the permanent joint committees which have been established at many shipping points. Furthermore, work of this kind enabled the railroads to determine, at practically every receiving station, which of the shippers were at fault in their method of packing. It also definitely established the extent of the imperfection of the packages being delivered to the carriers by the shipping public. The Western Weighing & Inspection Bureau reported that during the perfect package

the accomplishment of this work will be of particular value to the claim agents in their efforts to make favorable claim settlements.

Table No. 1 shows that the greatest number of errors reported during the perfect package campaign were the result of inaccuracy in the marking of shipments.

Table No. 2 gives the recapitulation of the detailed reports contained within the pamphlet. The reports of the 1,294 cities and towns are grouped with respect to their size and are summarized accordingly.

The above tables are considered more of an "indication" than a fact. The wide range of differences in the figures indicate inaccuracy which is due to the variability in the efficiency of the freight inspection service throughout the country.

TABLE 2—RECAPITULATION OF DETAILED REPORTS HEREWITH

Group	Population	Freight		Express		Freight and express		Combined per cent perfect
		Number shipments	Number exceptions	Number shipments	Number exceptions	Number shipments	Number exceptions	
A (56 cities).....	Over 100,000	5,724,764	50,357	7,871,455	64,697	13,596,219	115,054	99.15
B (156 cities).....	25,000 to 100,000	1,946,605	30,726	1,508,649	6,931	3,455,254	37,657	98.91
C (254 cities).....	10,000 to 25,000	1,098,041	16,324	848,642	5,559	1,946,683	21,883	98.88
D (227 cities).....	5,000 to 10,000	338,155	2,761	350,523	2,137	688,678	4,898	99.29
E (601 cities and towns).....	Under 5,000	232,180	1,592	320,083	1,746	552,263	3,338	99.40
Total (1,294 cities and towns).....		9,339,745	*101,760	10,899,352	*81,070	20,239,097	*182,830	99.10

*Totals of freight and express exceptions in tables 1 and 2 do not agree because 145 cities totalized but failed to itemize all exceptions.

RECORDS OF LARGER CITIES

	Freight		Express		Freight and express combined		Per cent
	No. of shipments	No. of exceptions	No. of shipments	No. of exceptions	No. of shipments	No. of exceptions	
New York	689,097	1,220	2,412,787	50,492	3,101,884	51,712	98.33
Chicago	973,902	9,506	1,156,859	2,389	2,130,761	11,895	99.44
Philadelphia	333,187	1,967	412,066	1,087	745,253	3,054	99.59
Detroit	92,525	226	117,098	151	209,623	377	99.82
St. Louis	435,027	2,218	324,910	108	759,437	2,326	99.69

AN APPEAL TO AUTOISTS.—The New Year will see a thousand or so new graves and the hospitals will care for thousands more who will be seriously injured, all due to careless autoists at railroad crossings. Are you, Mr. Autoist, going to fill a grave in 1922? Are you going to supply patients for the hospitals? Or are you going to drive with care and stop and look and listen at the railroad crossings?—B. R. & P. Circular.

E. A. SANDLIN, agent of the Southern Railway at Old Fort, N. C., is complimented by the auditing department for reporting for the month of November, when his business amounted to 21,677, uncollected bills of only \$5.52; and the auditor says, in his letter, that this is not materially different from the reports of the preceding ten months. Mr. Sandlin has been in the service 34 years, a part of the time as train dispatcher.

Practical Education in the Car Department*

Systematic Instruction and Examination of Inspectors and Foremen and Annual Staff Conventions

By C. G. Juneau

Master Car Builder, Chicago, Milwaukee & St. Paul

THE EXPERIENCE of ages has been used to build up and advance most of our methods of transportation, but in railroading we have only the wisdom of a hundred years to help solve our problems. And as the United States contains some 60 per cent of the railroad mileage of the world and the remaining 40 per cent is scattered over the face of the earth, we cannot even turn for help to others but must confine our studies to an analysis of our own experiences in the endeavor to solve our difficulties.

Examination of the industry of railroading reveals, first, that it is immense. Excluding agriculture, it is the largest single industry in the country, and it approaches in size a majority of the other industries combined. Its very immensity means to it many problems. Second, it is very complex in its make-up, including, as it does, large and varied forms of activities. Wide experience is a first necessity to a successful railroad man. Third, it is variable, ever fluctuating in quantity and changing in character. The problem of how to handle a certain quantity of coal today will be replaced tomorrow by a deeper problem, because of the changing of the chief commodity to be moved to wheat, lumber, or oil. There is nothing tangible to guide railroads; and as business conditions change much more rapidly than it is possible to alter existing equipment or provide new equipment, only by careful study of all forms of industrial and agricultural conditions, politics, money markets, and general world conditions, can an intelligent forecast of demands upon the railroads be arrived at.

The fact that the undertaking is so immense at once suggests that railroad employees should be drawn from particular schools or universities wherein they would be specially trained for one or another of the phases of railroad work. No educational institution can produce a railroad man for the reason that railroading is complex and fluctuating. His education must accompany his experience, and must change to conform to fluctuations in railroad conditions.

Lacking centuries of experience on which to base their judgment, unable to use the experience of other countries, and unable to turn to educational institutions to provide a trained personnel, the railroads' one chance of resurrection seems to lie in the education of their own employees along the lines of their employment.

Railroad education might be divided into three phases, viz., (1) education of the men; (2) education of their officials, and (3) education of the public. I am going to deal mainly with the first subject and confine my remarks to our own experiences in the mechanical department of the railroad I serve.

Systematic Education of Foremen and Inspectors

As a prelude to our educational campaign, it was laid down that all officers in the mechanical department should endeavor to educate those responsible to them to help in making railroad service a vital response of human effort and energy. It was realized that the first milepost could not be successfully and safely approached unless those interested undertook their work seriously, and this could not be brought about until those in charge had created an atmosphere of

respect and established the fact that there was need for each employee's best effort.

The multiplicity of instructions and the rapidity with which they were issued during government control made compliance with them almost a human impossibility. Conflict, doubt and confusion existed. Our then master car builder drew up and issued a booklet laying down guiding rules for every phase of work in the car department. This was issued to all supervisory forces, and its effect was electrical. Summed up in the terms of the carman, "it put the car department on the map." The principal parts of this booklet were published in the *Railway Mechanical Engineer*, commencing in January, 1920. This move may be termed the real beginning of our educational system in the mechanical department. At the present time, a book covering the maintenance of and repairs to locomotives, and instituting standard practices even to the finest detail, is in process of completion. In the meantime the information is utilized by being issued piece by piece in the form of circular letters.

Following the issuance of the first booklet, a concerted move was made to have every foreman or group of foremen provided with a *Car Builders' Dictionary* and to supplement this later with other books. Those engaged in special undertakings were induced to obtain the most authoritative publications dealing with their particular work, and many of our car department supervisors became connected with institutions and organizations which conducted discussions and issued current literature on terse subjects.

Monthly educational bulletins have been issued which deal systematically with the various phases of the car department work. One series of articles covers air brake work, another safety appliances, etc. The bulletins are furnished in sufficient quantities to make the information available to every employee in the department, no matter where located. Questions arising in connection with the articles are taken up by the men direct with whoever is conducting the publication, without passing through any official channels, and the questions and the answers both appear in the next issue of the bulletin. When necessary, the bulletins are supplemented with blueprints or sketches.

It was realized, however, that results would be derived more from successful application than from any particular virtue of the scheme itself. We therefore arranged for every inspector—freight and passenger—to be examined by our general safety appliance inspector, and later all foremen were similarly questioned. When this questioning was completed, a regular monthly examination system was inaugurated. This is conducted by sending to the district general car foremen 20 questions, based on information previously published in the educational bulletins, which on a given day are distributed to inspectors and foremen. Below each question, space is provided for the answer. When filled in the papers are returned and marked; five marks per question are allowed. The results are systematically recorded in my office and bulletined locally.

As a result of this system we have effected an improvement beyond our most sanguine expectations. The first report on our educational campaign stated that the then existing opinion that bad safety appliance conditions on our cars and locomotives was due to negligence was not correct; it was

* Abstract of a paper read before the Western Railway Club, Chicago, on January 16, 1922.

due to ignorance. It went on to say that not more than ten per cent of the inspectors on the system could pass an 85 per cent examination, and not 25 per cent could pass a 50 per cent test. That report was made less than two years ago, but today the number not regularly obtaining 90 per cent is negligible. Of course there has been quite a little transferring of men to other work, and in some instances inspectors have had to be taken out of service. But our inspectors today—the men we regard as of primary importance to the movement of our equipment—wear an air of confidence born of knowledge. Our derailments and accidents have decreased, and our percentage of on-time trains has risen to a very pleasing degree.

The examinations so far have been confined to safety appliances and matters connected directly and indirectly therewith. Extension to air brakes is being made, and we propose gradually to include questions concerning wheels, axles, general repairs, etc. Now no carman is appointed an inspector unless he can pass the necessary practical examination. Men desirous of promotion are voluntarily taking the monthly examinations, and we have at present a considerable number of men fast qualifying for positions of responsibility. The enthusiasm alone displayed by the men has been full reward for the effort necessary to inaugurate and sustain the campaign, but I feel that the big harvest is yet to be reaped.

Annual Department Staff Meetings

It was realized that as a group railroad employees attained a tremendous measure of experience, due to the large scope of the work, but that failure resulted from lack of opportunity for exchanging ideas. Accordingly, it was arranged to hold annual staff meetings of the car department and the locomotive department at Milwaukee. Later we inaugurated conventions of the blacksmiths, traveling engineers, and others interested in a particular phase of railroad work. At these staff meetings and conventions, prepared papers are read and discussed. The keen interest of the management in the meetings has been evidenced by the attendance of the president, vice-president, general manager, general superintendent of motive power and other officers. Such meetings as these wherein matters are discussed without restraint are most valuable educational schools. Foremen or master mechanics opposed to a scheme proposed by the management will leave such meetings enthusiasts for the scheme by virtue of knowledge of the other man's viewpoint; or, on the other hand, modification and even withdrawal of schemes may result from cold facts produced by unrestrained discussion.

At these staff meetings supervisors are educated as to how to deal with their men, to lay out their work, to handle their material. The papers and the discussions are printed and circulated, so that every foreman on the system may obtain the fullest possible benefit from the meetings. The papers are not contributed wholly by men within the mechanical department, but also by those in other departments, and even by persons entirely outside of the railroad field. Our aim is to secure as authentic articles as possible, to spread their contents by means of discussion, and then to make them available as guides for the following year's work.

Special instructions prepared and issued for various classes of service include, in addition to safety appliances and air brakes, already mentioned, valve motion for locomotives, electricity, and the federal locomotive inspection law. Monthly reports covering all phases of the department's operations are issued to principal supervisors and, in condensed form, to every foreman on the system.

Education of Operating Officers

Because the mechanical side of railroading has never ceased to advance, there arises the necessity of educating those we serve in the operating department to the viewpoint

resulting from our experience and experiments. This task is simplified somewhat where officials have served in the ranks, or made more difficult where they have not. It is not an easy matter to impart one's knowledge to another, and the added handicap of lack of time and opportunity often makes it a difficult problem. The need of having those administering a department made aware of all that is involved, however, stands out very clearly in my mind. The means we endeavor to employ to attain the desired result is discussion of each problem by the men on the spot. This admittedly does not entirely serve the purpose, and greater education in this direction is much to be desired.

Education of the Public

Although the railroads are servants of the public, it is astonishing what colossal ignorance exists in regard to even the simplest phases of their operation. This alone is a severe handicap to railroads in their present dilemma; but when public opinion is fed by contributions to a vicious press by authors often ignorant of anything beyond the most elementary railroad matters, they are even further harassed. I do not refer to the press as a whole, but to a certain section of it which allows its remarks on railroad problems to take the form of destructive criticism. Such articles are not productive of any good, but do the railroads much damage. If the section of the press referred to is attempting to harm the railroads, its attitude is a great success. If it is trying to better conditions for the public, it is a drastic failure.

Partially as a result of the attitude referred to, we occupy the very unpleasant position of having a portion of the public believe that the railroads are nothing but a network of intrigue—rotten in morals and with only sordid aims in view. To those who have devoted the best part of their lives to the work, not because they received adequate monetary or other reward, but because the word "service" meant to them what the colors mean to a regiment in battle, this is indeed their cup of bitterness. It is time for action. Let us concert our efforts to have the public know that the railroad man is not a rotter, not an ignoramus, but their efficient most loyal servant, and a worthy citizen of this great republic.

EXPORTS OF APPLES from Halifax, N. S., this season have amounted to 613,886 barrels, 5,635 boxes and 3,739 half barrels. These apples have gone to Liverpool, London, Manchester, Glasgow, Hull, Avonmouth, Cardiff, Newfoundland, West Indies, New York and Boston.



Photo by Kadel & Herbert

Fighting the Snow in Norway

Handling Freight in the Country's Largest Terminal

Marked Reductions in Costs Obtained by Operating Electric Tractors and Trailer Trucks

THE PENNSYLVANIA has recently revised its method of handling less-than-carload freight at its new terminal at Polk street, Chicago, with excellent results. Hauling by trailer trucks and electric tractors is the outstanding feature of the new system. Introduced in July, 1920, and enlarged upon in the following year, the equipment and the system built around it has operated to accomplish marked economies. The amount of labor required for the handling of the freight has been reduced more than half and the tonnage handled per man has more than doubled. Greater elasticity in performance has obtained, while business is



A Typical Tractor Train on the Freight House Floor

handled with greater dispatch and less demand on floor space.

As described in the *Railway Age* of August 2, 1918, shortly before the opening of this large freight house, the Polk street terminal is a four-story structure, 450 ft. wide and 745 ft. long, which is built over 19 tracks with a standing capacity of 375 cars; the first or street level floor constituting the freight house proper and the upper three floors being utilized for storage by a warehousing concern. All merchandise is handled between the several floors and the track level platforms by 32 elevators, 8 of which are three-ton, 21 five-ton and 2 10-ton.

From the opening of the building in 1918 to July, 1920, the hauling was accomplished by hand-trucking. The equipment consisted of the ordinary two-wheel trucks and 25 trucks of the four-wheel type, and the system required each trucker to push his load from the point of loading to its destination. Meanwhile the Western Warehousing Company, a subsidiary of the Pennsylvania, which occupies the 600,000 sq. ft. of storage room on the upper three floors, had adopted and was operating to advantage a system of tractor haulage, the warehousing equipment consisting of three tractors and 200 trailer trucks.

Hand trucking in the freight house never having been very satisfactory and having afforded little opportunity to reduce a considerable expense and annoyance of handling freight by this means in so large a building, observations were made of the warehousing company's system, and some experimenting was done on the freight house floor itself. As a result of these observations it was finally decided to inaugurate tractor haulage and pursuant to the decision four Mercury tractors and an equipment of trailer trucks were installed in July, 1920. In November, 1921, after 15

months of tractor operation the equipment was enlarged by the addition of two tractors and a sufficient number of trailer trucks to bring the total up to 725.

The System of Handling the Freight

The system under which the haulage operations are performed with this equipment is as follows: The building being divided into outbound and inbound sections; outbound freight delivered to the house by street vehicles is received at any one of 33 doors, unless it is a load of seven packages or less in which case it is received only at a package door, or unless it is a load of perishable freight when it is received only at a perishable freight door. At these doors the vehicle is met by a gang of three men consisting of a receiving clerk, truckman and loader, who with the exception of the gangs at the package and perishable freight doors, are assigned to two doors.

These men proceed to load the goods received from the vehicles upon the empty trailer trucks which are distributed by tractor under orders from a supervisor. Only that freight may be placed on any one truck which is to go into one car even though it amounts to no more than a single package. As soon as this freight is loaded on the trailer trucks, they are pushed to the nearest elevators, the average



Tractor Trains Operating on the Track Platforms

distance to which is 40 ft., where they are surrendered to an elevator man who lowers them to the track level and pushes them out upon the platforms. Here they are arranged into trains by a "floating stevedore" under a plan whereby all of the trucks for each track are assembled together. They are then picked up by a tractor and hauled to their destinations, the tractor in every case picking up the trucks as it proceeds from the outer end of the platform toward that end which permits it to pass around the end of the tracks.

The plan also provides that on any one trip only those trailer trucks are picked up for transit which are to be delivered to the platform for which the tractor train is enroute. Having reached the platform in question, each truck is then set out at a point adjacent to the car in which the contents are to be loaded, this operation being performed by

the one man, aside from the motorman, who accompanies the tractor train. When the freight is received by rail in trap or transfer cars the system differs only in the fact of its operations being carried on entirely at track level without the intervening steps introduced by elevator operation.

The Inbound Operations Are Just the Reverse

In handling inbound freight the packages are loaded upon the trailer trucks under a tallyman's direction and according to a plan whereby each truck is loaded only with that freight marked for the same destination in the house. After

in use at the Polk street terminal is that the benefits which are now accruing from it are the results of considerable development and have increased steadily as the men have become more accustomed with the system and as the amount of equipment has been enlarged. A good indication of this is furnished by the fact that while the average tons handled per man per hour was 1.20 for the first six months of 1921, it has increased to an average of 1.76 for the last six months and for the last three months the figure has averaged above 1.80.

We are indebted for the above information to E. H. Kirk-

TRUCKING OPERATIONS AT THE PENNSYLVANIA'S POLK STREET TERMINAL BEFORE AND AFTER TRACTOR INSTALLATIONS

The six months period prior to tractor haulage					The last six months of 1921 under tractor haulage									
Month	Number of truckers employed	Trucker hours	Tons handled	Tons per man hour	Month	Trucking force			Trucking hours			Tons handled	Tons per man hour	
						Truckers	Tractor operators and helpers	Total	Truckers	Tractor operators and helpers	Total			
January....	195	43,651	37,038	.85	June.....	90	8	98	18,922	1,740	20,662	33,712	1.63	
February....	183	48,763	45,940	.94	July.....	80	8	88	16,275	1,454	17,729	29,773	1.68	
March.....	328	85,023	56,611	.66	August....	82	8	90	19,444	1,902	21,346	35,710	1.67	
April.....	155	37,739	22,926	.61	September..	84	8	92	17,815	1,782	19,597	35,256	1.80	
May.....	199	49,785	38,104	.77	October....	93	8	101	19,734	1,862	21,596	39,921	1.85	
June.....	256	69,674	55,107	.79	November...	86	12	98	17,964	2,346	20,310	37,356	1.84	
Average men per month	219.3	334,635	255,726	.764	Avr'ge. men per month.....	85.8	8.7	94.5	110,154	11,086	121,240	211,728	1.746	

the trucks are loaded each truck is pushed to the nearest elevator where an elevator man raises it to the first floor, the operation thereafter consisting of its haulage by tractor to the proper destination which may be in the alphabetical section of the house, such as Section D for Duncan Brothers, a section specially restricted for a particular shipper; the cold storage room, or a point where cars are loaded for the underground tunnel system. Arriving at these points, the trucks are uncoupled from the train and the freight is either unloaded or left on the trucks, depending upon the demand for trucks at the time and the likelihood of their being released within a period not to exceed 48 hours.

The trains ordinarily consist of seven or eight trucks but often carry as many as 14 or 15 loads, this loading being governed almost entirely by the bulkiness of the packages and operating convenience rather than by consideration of tractive power. As has been stated above, the tractor crew consists only of a motorman and an attendant although some conditions arise where it is found advisable to engage the assistance of additional attendants temporarily as where a long train of bulky material must be assisted around sharp corners or along narrow platforms of which there are several in the house.

Marked Results Have Been Obtained

The benefits which have arisen from the tractor operation are several. A comparison of the records for the last six months of this year with those for the six months immediately preceding the inauguration of the present system bring this out. As the accompanying table shows, between these periods the average number of tons handled per trucker has been increased from 1167 to 2228, or 90 per cent, while the number of tons handled per man per hour has been increased from an average of 0.764 to 1.746 or 128 per cent, or if compared with the records of the last three months of the year from an average of 0.764 to above 1.80. This reduction in the forces actually handling the freight has also permitted some reductions to be made in clerical forces. The average size of the gangs receiving the freight from vehicles and of those loading or unloading the cars has been reduced from 6 or 7 men to 2 and 3. It has also been possible to cut down the distance through which the truckmen are required to operate from an average of 1,000 ft. or more to less than 50.

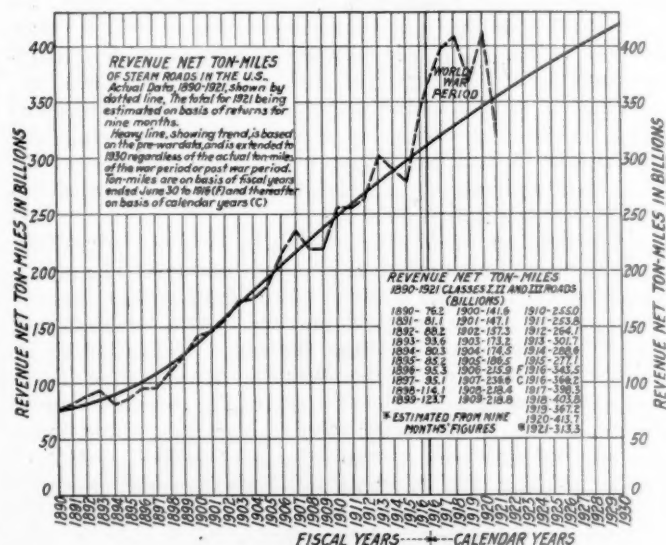
One interesting point which arises in studying the system

land, freight agent and Oscar Hess, general freight foreman, of the Pennsylvania Terminal, under whose direction these trucks have been installed.

Trend of Freight Traffic

WASHINGTON, D. C.

THE Interstate Commerce Commission has given to the press the accompanying chart prepared by its Bureau of Statistics, showing the trend of railway freight traffic since 1890, which indicates that, based on the rate of growth prior to the war period, and disregarding the great increase during the war period, which was lost in 1921, it would take until 1929 to reach the high level that was reached in



A Trend Curve of Revenue Ton Miles

1920. The dotted line of the chart shows the revenue net ton-miles, 1921 being estimated on the basis of the actual figures for nine months, while the heavy line shows the trend extended on the basis of the pre-war data. The 1921 ton mileage is estimated at 313,300,000,000, which is less than that for any year since 1915.

Railroads Conclude Rate Testimony Before I. C. C

Testimony and Cross-Examination of Executives to Be Followed
by Testimony of Shippers on Particular Commodities

WASHINGTON, D. C.

S. M. FELTON, president of the Chicago Great Western; H. E. Byram, president of the Chicago, Milwaukee & St. Paul; W. L. Mapother, president of the Louisville & Nashville, and Samuel O. Dunn, editor of the *Railway Age*, testified before the Interstate Commerce Commission in its general rate inquiry on January 12, 13 and 14, after which three days, January 16, 17 and 18, were devoted to cross-examination of the railroad witnesses. Daniel Willard, president of the Baltimore & Ohio, was also questioned by the commissioners at some length following the reading of his prepared statement on January 11.

Commissioners Aitchison and Hall resumed their attendance at the hearing on January 17, joining Commissioners Esch and Lewis after their appointments had been confirmed by the Senate the day before.

The commissioners asked numerous questions as to the possibility of increased efficiency and economy from various methods which have been very generally suggested, such as joint use of terminals, pooling of equipment, electrification, abolition of passes and "private" cars, etc. At one point Commissioner Lewis said, however, that the fact that questions were asked which had been suggested did not necessarily mean that the commission was impressed with the suggestion. All of the railroad witnesses agreed that there are many opportunities for greater economies but that the important ones usually require the investment of considerable amounts of capital for better or more facilities. While they also agreed on the importance of small economies, and Mr. Byram particularly described many ways in which economy or increased efficiency had been brought about by plans for enlisting the co-operation of the employees, Mr. Willard said the railroad problem is not to be solved by saving on lead pencils or abolishing private cars or passes. All of the executives said that the percentage to be prescribed by the commission as constituting a fair return after March 1 should be not less than six per cent.

Felton Says Rates Cannot Now Be Reduced

There can be no hope in the railroad situation if freight rates are to be reduced at the first sign of improvement, Mr. Felton said.

"The position of the railways," said Mr. Felton, "is that no further reductions of rates can be borne by them until labor costs and other expenses are reduced. The western lines in company with the other railways of the country are just beginning to struggle to their feet financially. The increases in their net operating income, which have been secured within recent months, have been partly due to reductions of wages and other costs but even more to extremely drastic retrenchments. The facts show that no reduction of rates sufficient to have any considerable tendency to increase the traffic moving could be made, unaccompanied by corresponding reductions of labor costs, without throwing the western railways back financially in as unpromising a situation as they were in a year ago.

"There is still room for effecting large economies in operating expenses, but this can only be accomplished by very heavy capital expenditures. Much has been done along this line in the past, and much more can be done. The capital required, however, can only be obtained on fair terms, if the credit of the roads is good, and that must depend to a large part on the operating results which may be secured.

"If rates are placed on such a level that the return is reduced to the minimum, the prospect of obtaining the vast

amount of additional capital is far from promising. On the other hand, if the railroads' credit is such that they can raise the necessary capital and thus be enabled to embark on a program of wise improvement in and additions to their properties, with all that means in the matter of making a market for the materials that go into the work and the employment it will give to thousands who are now out of work. I know of no other single factor which will go farther towards reviving industry.

"It is impossible to estimate prospectively the effect upon net income of economies which may be made through increased efficiency and the use of more economical methods in any given period of time. Efficiency of management must be tested by results and railroad executives have a right to demand that they be so tested. The record of the American railroads for the past 30 years is a record of progressive efficiency through which billions of dollars have been saved to the public in the lessened expenses of operation and but for which the transportation bill of the country would be greatly in excess of what it is."

To Fix Rate Below 6 Per Cent a Blow to Credit

Mr. Felton said it would be entirely wrong to predicate any action on the somewhat improved situation during the four months ending October 31. In making the recent reductions on agricultural products the carriers have gone the limit as to rate reductions until they reach a stabilized basis either by reduced costs or increased traffic. In speaking of the need for heavy capital expenditures he recalled the fact that in his testimony in Ex Parte 74 he had referred to the need of more facilities but, he said, periods of depression must be disregarded in planning for the future. It is the judgment of the railway executives, he said, that there has been no change in conditions to warrant the commission in prescribing a less percentage of return than that provided in the transportation act for the period ending March 1, and there could be no greater blow to the credit of the railroads than an act of the commission fixing a rate lower than six per cent. This, he said, should also be regarded as an average so as to make up in prosperous times for periods of depression. If it is to be regarded as the limit in good times and the roads cannot attain it in dull times there is no hope for the roads.

Replying to inquiries by Commissioner Lewis, both Mr. Willard and Mr. Felton expressed the opinion that a reduction in the passenger rates from 3.6 cents to 3 cents per mile would not stimulate traffic sufficiently to offset the decrease of \$280,000,000 in the carriers' revenues which such a reduction would mean.

Mr. Willard Questioned

Commissioner Esch inquired of Mr. Willard as to the losses that come from the issuance of passes and the use of private cars. Mr. Willard said that while he did not think it could be said that there was no loss from the use of passes, the complete abolition of passes "would not have a controlling influence over the present situation."

Mr. Willard told of economy measures that have been taken by the Baltimore & Ohio, particularly in relation to the saving of fuel. He said even to teach firemen to save one scoop of coal a mile would mean a saving to that road annually of 500,000 tons which Commissioner Lewis pointed out would mean an annual saving of \$1,500,000.

Questioned regarding the use of private cars, Mr. Willard

said: "That is another thing which has been very much misunderstood. Of course the private car is just as much of a working institution of the railroad as the office."

Mr. Willard said that while there may have been some abuses of the private car in the past, in his belief there is no ground for complaint on this score at the present time.

"Take my own case," he continued. "When I am on the road it is the same as when I am in my office. My secretary is with me. My files are with me. I get my messages and carry on my business the same as I would if I were at home. A car is of very great assistance and what is true in my own case is true of all other officers who are provided with cars."

"Is it true that New York bankers have passes over practically all roads?" asked Commissioner Lewis.

"It is not true of the Baltimore & Ohio," replied Mr. Willard with emphasis.

Pointing out that coal shipments constitute approximately 48 per cent of the traffic over the Baltimore & Ohio, Mr. Willard said that should a ten per cent reduction in coal freight rates be made, his road would be required to handle 20 per cent more coal or 60 million tons additional in order to make up for the loss in such revenues. Such a thing, he said, would be impossible because the Baltimore & Ohio has not got the facilities to handle such an increase.

View Rate Reduction With Apprehension, Says Byram

Mr. Byram and Mr. Mapother both asserted that while some relief has already been provided the carriers through the action of the Railroad Labor Board in reducing wages, it is inadequate to enable any further reduction in rates at this time.

Mr. Byram told the commission that despite the fact that his road had taken advantage of every available resource to promote efficient and economical operation it has been unable to produce net returns for its stockholders "and during several months in the last year has failed to earn its fixed charges."

"The universal demand for further reduction in freight rates presents a situation, therefore, which we must view with apprehension," he said.

Mr. Byram added that while immense opportunities are available for further increasing economy of operation by large investments in reducing grades, double track, improving and increasing terminal facilities, etc., these improvements cannot be made because they would "require the investment of immense sums of new capital which cannot be obtained unless the earnings of the railroads are such as to satisfy investors that such investments in railroad securities would be safe and productive."

"At the present time," he continued, "because of the impaired credit of the railroads generally, money for improvements cannot be borrowed in the usual way except at rates considerably above the rates permitted by the Transportation Act to be earned on the value of the improvement."

"Therefore, it would seem that the need of the immediate situation requires a reduction in operating costs and fuel and labor, which absorb 80 per cent of the total operating cost, must bear the larger portion of the reduction. Fuel and other supplies already are coming down and the United States Railroad Labor Board decision 147 decreased our payroll almost 11 per cent or about \$770,000 per month effective last July. These changes have been helpful but it is evident from figures already submitted that greater relief is needed to keep the transportation system intact."

W. L. Mapother for Southern Roads

After reviewing the financial condition of the southern railroads which for the year which ended on October 1, 1921, earned only 14½ per cent on their investment, Mr. Mapother said:

"Rates cannot be reduced without a very material reduc-

tion in operating costs, which latter cannot be produced without the modification of rates of pay and working conditions along the lines suggested. Any arbitrary or premature reduction of the revenues of the carriers would certainly prove ruinous to the general business interests."

Mr. Mapother said "present conditions of business do not justify an optimistic expectation for an early commercial revival."

"Judged even by the net railway operating revenue of the southern carriers for the four months' period since the wage reduction, from July 1, 1921, to October 31, 1921, the yield on the investment falls about 33⅓ per cent short of that contemplated by law," he continued. "Had not the traffic movement in October been influenced by abnormal conditions the deficiency in the return on the investment for the four months' period since July 1, 1921, would have been even greater. The management of almost every road in the southern region has given expression to a deferred maintenance in 1921, particularly in equipment. Had the full complement of maintenance been effected, the yield on the investment would have been still further reduced."

"I believe that thrifty and careful administration has been practiced to the maximum extent and it is quite evident that the exigencies of the transportation situation during the past year have forced the application of economy upon a scale which, if continued for any great length of time, must ultimately rebound to the detriment of the public interest."

Mr. Mapother said "wages of railroad employees should be more flexible and in a larger degree determined by the management."

"In this way," he said, "railroad operations will more quickly adjust themselves to economic conditions and the ability of the railroads to pay a given wage under certain conditions will be given consideration in fixing wages. The standardization of railroad wages is wrong in principle. There is no logical reason why railroad labor should not be amenable to the law of supply and demand to the same extent as labor engaged in other lines of industrial endeavor. Aside from this discussion, however, the first essential to increasing the net income of carriers in the southern region is a reduction in wages."

"While the greatly increased cost of fuel in recent years has been a substantial factor, the excessively high expenditures for labor have presented by far the most formidable barrier in the way of smaller costs of operation and incidentally the greatest obstacle against the realization of a satisfactory income under the Transportation Act. Labor costs, although measurably modified by recent revisions in wage schedules and agreements, are still overstepping all bounds of proportion in comparison with other charges and their absorption of gross earnings is yet substantially greater than was ever recorded under normal or pre-war conditions."

Joint Facility Savings Much Exaggerated

Mr. Mapother said that in his opinion the saving which it is claimed would result from greater use of joint facilities is very much overestimated.

"It is not believed," Mr. Mapother said, "that any enhanced economy can be produced in this direction without incurring an enormous expenditure for rearranging and expanding the existing terminal facilities. Personally, I believe that the somewhat popular idea that great economy and improved efficiency can be brought about through a more intensive joint use of the existing terminal facilities has been very much exaggerated or is, in fact, a fallacy."

"Joint facilities are now being made use of in most instances wherein the handling of traffic can be expedited and economies effected. During federal control much effort was made to extend the joint use of facilities, but the results were according to my observation, very far from satisfactory. In many instances, it was not only clearly demonstrated that no

economy resulted, but the expedition of traffic was impaired; shippers were subjected to great inconvenience and much dissatisfaction resulted.

"The joint facility accounts of the Southern lines for the year which ended on September 30, 1921—showing a debit of \$1,550,273—indicate that the exchange of facilities is being practiced on a very considerable scale. Additional arrangements of this character are being and will be effected whenever the possibility of more economical operation may present itself, but nothing short of complete reconstruction and enlargement of the existing facilities would render it possible to uniformly establish joint operations at all important terminals."

Decline in Railway Development

Pointed Out by S. O. Dunn

The progressive decline in railway development in the United States as measured by miles of line and cars and locomotives ordered and built in recent years was shown by Mr. Dunn in tabulations of statistics compiled by the *Railway Age* and confirmed by official reports of the Interstate Commerce Commission. This decline, Mr. Dunn showed, has been accentuated since the war and by 1920 there was an actual reduction in the mileage of line and in the number of locomotives and freight and passenger cars in service, but the decline in the annual rate of increase had begun long before the war.

In each of the last five years the mileage of railroad line abandoned in the United States has exceeded the mileage of new line built, Mr. Dunn said, and in 1921 the mileage of new line and the cars and locomotives ordered were less than in almost any previous year in railway history. The new railroad mileage built in 1921 was 475 miles, or less than has been reported in any previous year except 1920, when only 314 miles were built. In the four years ending with 1901 the new mileage averaged 4,524 miles a year; in the four years ending with 1905 the average was 4,974 miles; in the four years ending with 1909 it was 4,449 miles; in the four years ending with 1913, 3,314 miles; in the four years ending with 1917, 1,135 miles, and in the four years ending with 1921, 549 miles.

For the five years 1917 to 1921 inclusive, the mileage of railroad abandoned in the United States has totalled 4,989 miles, of which 1,714 miles represents track actually torn up and the balance represents mileage on which operation was suspended. In 1921 operation was suspended on 1,409 miles, 217 miles of line were actually torn up and authority was asked of regulating authorities to abandon 575 miles.

The Interstate Commerce Commission during the year ending October 31 issued certificates authorizing the construction of 405 miles of new line and the abandonment of 702 miles. Mr. Dunn also quoted from Interstate Commerce Commission records which show a decrease in the total mileage of railroad owned in the United States from 254,251 in 1916 to 253,708 in 1920.

Few New Cars and Locomotives Acquired

The number of locomotives in service on the railways of the United States increased 7,378 in the four years ended with 1913, Mr. Dunn said, but only 473 in the four years ended with 1917 and 617 in the four years ended with 1920. The number built for service in the United States and Canada in 1921 was 1,185, or less than the number built for the United States alone in any year since 1897.

The average number of locomotives built annually in the United States and Canada in the four years ending with 1909 was 4,319; in the four years ending with 1913 it was 4,137; in the four years ending with 1917 it was 2,126 and in the four years ending with 1921 it was 2,259. The number of locomotives ordered in 1921 for service in the United States was 239, which is the smallest number ever reported except in 1919, when it was 214. The average number of

locomotives ordered annually for 21 years has been 3,225, while the average number ordered annually during the last four years was only 1,384.

As to freight cars, Mr. Dunn showed that the average number built for the United States for the six years ending with 1904 was 123,256. In the five years ending with 1904 it was 111,824, and in the four years ending with 1921 it was only 65,823. The number built in 1921 was only 40,292, which is the smallest number ever reported since the *Railway Age* began to compile the statistics in 1899. In 1906 and 1907 alone the number built was 516,667.

The number of passenger cars built in 1921 for use in the United States was 1,275, the smallest number ever reported except in 1920 and 1919 and the number of new passenger cars ordered during the year was only 246.

Mr. Dunn Questioned

Commissioner Lewis asked if these statistics were presented to show that the railroad plant is not being kept up properly. Mr. Dunn replied that he had been asked to present the statistics, but he had no doubt that if compared with those of other industries they will show that the railroad plant has not kept pace with the development of other industries. Asked whether the railroads would be able to meet a normal demand for transportation, Mr. Dunn said he did not think they would. He recalled some of the experiences of the years 1917, 1918 and 1920 when the shippers of many kinds of commodities were unable to get cars.

Commissioner Lewis suggested that some people say there is less need for new cars than for better handling of cars. Mr. Dunn replied that that is undoubtedly true to some extent and in many cases it is not so much a question of cars as of having enough locomotives and other facilities to handle them promptly. But, he said, the figures show the same reduction in orders for new locomotives and new track facilities as in cars.

"Why haven't the railroads provided the facilities?" asked Mr. Lewis.

"Because they haven't had the money," Mr. Dunn replied.

"These figures on their face indicate a very unsatisfactory situation," said Mr. Lewis. "If that condition continues, what will be the effect?"

"The most important result will be the effect on the public," said Mr. Dunn. "If the development of the railways fails to keep pace with other business we are going to come to a condition where the railways will be wholly unable to handle the business. Many industries have undergone a great increase in capacity in recent years."

Questions regarding the reasons for the decline in railway development led to a discussion of the rate of return earned by the railways. Clifford Thorne asked if it was not a fact that in the three years prior to federal control the railways had earned a greater return than in any previous three-year period. Mr. Dunn said he had made a very careful check of that and had ascertained that it is not a fact.

Cross-Examination

Resuming the stand for the purpose of cross-examination, Mr. Felton said that his road had saved a considerable amount of money owing to the difference in labor costs through the repair of cars in outside shops.

Work which the Chicago Great Western estimated would cost \$1,100 per car, Mr. Felton said, cost only \$800 under contract while the cost of repairing five locomotives which that company has sent to outside shops was about 30 per cent less than what the same work would have cost in the company shops.

He told of having steel freight cars repaired in this manner and said the work was done for about one third less than it would have cost had his road had the facilities to perform the work. A large part of the equipment which that road had

repaired outside, Mr. Felton said, was equipment which had been roaming around the country during the period of federal control under the general plan of pooling equipment.

Representatives of shippers questioned Mr. Felton regarding coal prices now being paid. The witness said that many of the western roads are now storing coal in anticipation of a possible coal strike on April 1 next, but that this coal can be bought from \$2.10 to \$2.20 a ton at the mines compared with \$4 and \$5 a ton in the fall of 1920, and \$2.75 to \$3.75 on present contracts. Mr. Felton denied in reply to a question by Glenn E. Plumb, that this reduction in price was being granted by the coal operators contingent on an alleged agreement by the carriers to aid them in reducing wages.

At Mr. Fulbright's request, the carriers agreed to furnish the commission with comparisons of wages being paid railroad employees in the various districts with the "going rate" for other labor in the same territory.

Mr. Shriver, Mr. Aishton and Mr. Wettling were recalled for cross-examination on Monday. Most of the time was taken up by questions by Clifford Thorne, on behalf of the shippers' committee, regarding the statistical testimony, which seldom elicited an affirmative answer from the witnesses. Mr. Thorne tried several times to get Mr. Shriver to admit that the railroads had charged \$200,000,000 to operating expenses in 1920 or 1921, representing the increase in the inventory value of materials and supplies turned back by the Railroad Administration as compared with the value at the beginning of federal control without any increase in out of pocket cost. Mr. Shriver declined to agree to the statement, saying that new material that cost even more was also used and that it was charged out on the basis of the average stock price. Mr. Thorne said he was trying to make the point that this situation invalidated the comparison of maintenance expenditures. He also tried unsuccessfully to get Mr. Shriver to admit that the difference of some \$4,000,000,000 between the net capitalization and the property investment accounts of the railways must represent what has been acquired through the use of surplus earnings or charged to expenses, or gifts. Mr. Shriver said that if the balance sheets are properly related it would be impossible to arrive at any such conclusion.

Referring to the chart published in the *Railway Age* comparing the increases in prices and rates since 1890, which Mr. Shriver had used in an exhibit, Mr. Thorne asked if he had made any comparisons based on the period immediately preceding the war. Mr. Shriver said such a comparison would be absolutely erroneous because during that period the railroads had been forced to sell their product at a rate far below the prevailing level of prices. They had only been able to do this, he said, by the expenditure of large sums of new capital on which no return was earned.

Mr. Shriver Questioned by Clifford Thorne

In reply to questions by Mr. Thorne regarding the sums paid to the roads or due them from the government as rental or guaranty, Mr. Shriver said the roads in 1916 had earned a net operating income of \$1,055,000,000 or 5.92 per cent on the property investment, and in 1917, \$986,000,000, or 5.3 per cent. For 1918 and 1919 the roads' taken over by the government were guaranteed a rental of \$897,000,000, which was equal to 4.83 per cent on the property taken over. For 1920, if the roads finally get half a year's rental for the six months' guaranty, without deduction on account of maintenance, they should receive \$848,000,000, or 4.28 per cent. If they do not receive the full amount of their expenditures during the six months period this amount would be reduced. For two months of 1920 the roads received \$151,000,000 as rental, their guaranty for six months was \$484,000,000, and there was a deficit for that period to be made up of \$216,000,000. Mr. Thorne asked if it is not fair to say that the railroads have received in addition to the rates paid by the public, a billion and a half dollars since 1917. Mr. Shriver pointed

out that the companies had not received the revenues, nor the amounts necessary to meet deficits, but in reply to the question he made up a statement showing that in 1918 the Railroad Administration had earned \$255,000,000 less than the rental, in 1919 \$448,000,000 less and in the first two months of 1920, \$99,000,000 less than the rental, making a total of \$802,000,000 paid from taxation rather than from rates. The six months guaranty added \$484,000,000, making a total of \$1,286,000,000 and in addition there was a deficit of \$216,000,000. Mr. Shriver said the average net operating income of the test period was 5¼ per cent but when applied to the property actually taken over it produced only 4.83 per cent.

In questioning Mr. Wettling, Mr. Thorne referred to the railroad claims against the Railroad Administration for undermaintenance and asked if the expense of making up deferred maintenance in 1920 should properly be charged to current expenses. Mr. Wettling said they should not if they are reimbursed by the government but Mr. Thorne apparently wanted to consider the claims as a real account to which they could be charged.

Mr. Willard, Benjamin Campbell, vice-president of the New York, New Haven & Hartford, Edward Chambers, vice-president of the Atchison, Topeka & Santa Fe, C. R. Capps, vice-president of the Seaboard Air Line, and W. C. Maxwell, vice-president of the Wabash, were cross-examined on Tuesday.

Mr. Thorne questioned Mr. Willard closely regarding the basis for his statement that the rate of return should not be less than 6 per cent. Mr. Willard declined to be drawn into a discussion of intricate financial questions. He said that during the last 10 years the percentage of return had only exceeded 6 twice and with the experience of the past in mind he was convinced that nothing less than 6 per cent would meet the situation. As long as the United States government will not lend to the roads for less than 6 per cent on first class collateral, he said, it is difficult to see how stock can be sold on a lower basis. He said, of course, the percentage now to be fixed is not necessarily to be permanent. Under other conditions it might later be reduced. Railroads must be in a position eventually to sell stock at par and in his opinion the Baltimore & Ohio couldn't sell stock at par unless it paid 8 or 9 per cent.

After Mr. Thorne had referred to various statements made by Mr. Willard in the past the witness turned the tables by reading from a statement recently made by Mr. Thorne before the Senate committee, saying he did not wish to leave the impression that he thought it wise to starve the railroads or to have them undermaintained or have poor credit. On that statement Mr. Willard said he was in accord with Mr. Thorne.

In speaking of measures of economy and efficiency, Mr. Willard described a plan which the Baltimore & Ohio has recently developed carefully of holding cars of through traffic for certain principal destinations until there are enough cars to make up a 50-car train, which is then run through without intermediate switching, saving more than enough time to make up for the initial delay. He said other roads had done the same thing but he thought his road had given it more attention than some others and had found it necessary to work out a complete book of instructions to show all employees concerned just what to do.

When Mr. Dunn was recalled for cross-examination Mr. Thorne again brought up the discussion in connection with his assertion that the percentage earned by the railways in the three years ending June 30, 1917, was larger than that for any preceding three-year period. Mr. Dunn said he had received a statement on that point from the statistical bureau of the commission which showed an average return during the three years ending with 1907 of 5.62 per cent; during the three years ending with 1911 of 5.32 per cent, and during the three years ending with 1917 of 5.36 per cent. Mr.

Thorne took the position that accrued depreciation should be deducted from the property investment in the latter period before computing the percentage, saying that the commission did not require the roads to report the depreciation in the former period and that if the figures were placed on a comparable basis the result would be different from that shown by the statement.

Banker Discusses Rate of Return

Jerome J. Hanauer, of Kuhn, Loeb & Co., New York, testified on January 18, regarding the rate of return. He said in part:

The particular problem which is the occasion of this hearing is not only difficult, it is insoluble. The transportation act has made it mandatory upon this commission to initiate, modify, establish or adjust rates so that carriers, in groups which you have designated, will, under honest, efficient and economical management and reasonable expenditures for maintenance of way, structures and equipment, earn, as nearly as may be, a fair return upon their aggregate value. The commission is now required by law to determine the fair rate of return after March 1, 1922 and until again changed by it. In enacting this law, Congress omitted to provide that the shippers of the country should furnish the traffic necessary to make the law effective. The mandatory provisions of the act violate economic laws in so far as they require rates to be increased in times of depression when there is a minimum demand for transportation and to decrease the same in times of great prosperity, when the demand is at its maximum. At no time since the passage of the act have the carriers earned the permissive return, and, contrary to the belief held by many, there is no guarantee whatsoever. The companies are to earn the return if they can, but if they do not, they are not even permitted, except to a limited extent and for special purposes, to recoup themselves, out of earnings in excess of the permissive rate, earned in more prosperous times. Transportation companies are subject to the same economic forces as any other business endeavor; they will have good years and bad years and, unless they have a guarantee (which I do not favor), they must be permitted to build up a substantial surplus in the good years, to enable them to survive in times of depression. Only thus can their credit be stabilized, so that they will be able to give to the country that efficient service, without which its industrial life will be stifled.

Because the railroads perform a great public service, investment in their securities should be encouraged by a return at least as large and if possible more stable than that which can be obtained from any form of private investment having similar risks and similar opportunities.

In considering the rate of return necessary to attract investment funds into railroads, it does not avail to be guided by the rate at which old outstanding issues of underlying mortgage bonds are selling or that at which a very limited number of new issues of some of the few still prosperous companies have recently been sold. To all intents and purposes, first mortgage bonds are a thing of the past. The large additional amounts required hereafter must be raised by junior securities, for which the obligation itself of the particular company will be the main reliance, and by the sale of additional preferred or common shares. It is many years since any new issues of shares have been sold. Few companies could today sell any large amount of common stock and not many more could sell preferred stock and, of course, these are those companies that have the least need of new capital. And yet if our transportation system is to be enlarged and improved, if outlying sections of the country are to have railroads, if branch lines are to be built to the farming districts, to factories and to mines, much of the needed capital should be, probably will have to be, found by the issuance of new shares. In some quarters it seems to be expected that railroad companies can go on increasing their debt forever without increasing the equity behind it, yet how generally it is understood that little encouragement would be given to the owner of a house or a factory by the holder of his mortgage if he suggested that the mortgagee should increase his loan for the purpose of making additions and improvements, without the owner establishing an additional equity by providing, say one-third of the new money required.

Investors in railroad securities, as in fact in any securities, do not consider them as a class; they study the situation of the particular security in which they are asked to invest. Unless the margin of earnings is sufficiently ample to safeguard that security during lean periods, the security is discriminated against. Some railroad common shares yield, at current prices and with current dividends, about 6 per cent

and others as high as 9½ per cent per annum, all, however, with limited markets.

In determining the just rate of return upon the value of railroads, as established by this commission, much consideration must be given to the present physical condition of the companies' roads and equipment, and the conditions affecting the companies during and since government operation.

During the war the government recognized the necessity of being very liberal with manufacturers and others engaged in providing necessary war supplies. All such were permitted to earn large profits, the government relying upon the income and excess profits taxes to cover part of these profits into the Treasury. But all those engaged in these occupations were quite properly permitted, and did charge off out of profits before such taxes were figured, large amounts for the depreciation of their facilities due to the excess war costs, in addition to the customary charges for depreciation and depletion. These industrial concerns were thus enabled to set aside large reserves to tide over the difficult times which have come to them in the last year. Not so, unfortunately, with the railroads.

While the government spent great sums to provide other war facilities, all capital expenditures on the railroads were charged to the companies. In particular, there were purchased at inflated war prices, locomotives and cars costing almost \$400,000,000, which could today be produced for a much lesser amount, and from which the railroads could obtain no financial benefit until after the close of the guaranty period soon after which the business depression set in. No part of this cost was assumed by the government as a war cost and, therefore, the same must be borne by the roads and passed on eventually to the public.

These conditions have resulted in the railroads being in a poor situation to meet the depression which ensued after the boom period following the armistice. In order to maintain their solvency, they were compelled to reduce maintenance to a minimum, a policy which would, if persisted in for a longer period, place the properties in such a position as to be unable to meet the requirements of commerce when normal conditions return. Not alone this, but the absence from the market of large purchases by railroads, the discharge of labor employed in railroad maintenance, and in the production of railway supplies further greatly depresses business, causes much unemployment in other lines, and results in an endless chain of stagnation.

Liberal Rate of Return Necessary

Full consideration of the conditions affecting railroads and the relations of investors thereto, some of which I have endeavored to outline, lead conclusively to the decision that a liberal return on the value of the railroads is essential, not only to their prosperity, but to the prosperity of the entire country.

No figures of the exact division of railroad securities between bonds and shares is available to me. The percentage of shares is increased by the fact that a considerable part has been issued in reorganizations in which bondholders were compelled to exchange bonds for shares. In order, however, to be ultra-conservative with our figures, let us assume that two-thirds of the value of the properties is represented by bonds and only one-third by shares. The average net cost of the part represented by bonds is surely 5 per cent, probably more. The part represented by stock should, in view of no profit being figured in this calculation on the part represented by bonds, earn a profit of not less than 10 per cent to allow for a fair dividend, certain capital expenditures and a margin of safety for lean years. This would make a fair return on the entire capital value (not, of course, capital securities outstanding) 6⅔ per cent per annum. It is quite impossible to fix rates which would bring this return under anything like present conditions. No good purpose would be served by attempting to do so. The return now provided by the transportation act is not being reached even with present reduced expenditures for maintenance. An increase of the permissive return can, therefore, be left to future consideration, but on the other hand, any indication of reducing the rate of return now permitted, in the face of the fact that this rate is far below that required to induce investment in junior securities and shares of railroads, and far below the return obtainable from other forms of investment, would alienate whatever confidence remains in the future of our railroads and their securities.

Mr. Hanauer Cross-Examined

Mr. Hanauer was cross-examined by Mr. Thorne and other representatives of the shippers in an effort to show that the condition of railroad credit is no worse than that of other industries or public utilities. He said he was not trying to

make any such comparison but to show that the prospect of a return in the case of railroads is not sufficient to induce the investment of new capital. When Mr. Thorne asked him if he would agree that section 15-a ought to be repealed, he said he would if it were made entirely clear to the public that it was repealed because it is not wise to limit railroad return in good times without any guarantee for bad times, rather than allow the public to believe it was repealed because 6 per cent is too much.

On January 19 testimony in behalf of the shippers was begun, two days being allowed on coal and coke.

Freight Car Loading

WASHINGTON, D. C.

LOADING of revenue freight totaled 605,992 cars during the week ended on January 7, compared with 531,034 during the previous week or an increase of 74,958, according to reports compiled by the Car Service Division of the American Railway Association. In both instances the comparisons were between five-day weeks owing to the observance of a holiday in each. Compared with the corresponding week of 1921 the total for the week of January 7 was a decrease of 91,649 while it was a reduction of 224,681 compared with the corresponding week in 1920.

With the exception of ore, which showed a loss of 562 cars compared with the week before, increases were reported in the loading of all commodities.

The greatest increase over the previous week was in coal, the total being 136,982 or 31,320 cars more than were loaded during the week which ended on December 31, but this was 54,251 less than during the corresponding week last year and 72,356 less than the corresponding week in 1920. Loading of merchandise and miscellaneous freight amounted to 350,279 cars, a gain of 22,262 over the week before but 24,185 less than the total for the same week last year.

Grain and grain products totaled 40,673 cars, 10,598 more than the preceding week and 1,585 more than during the same week one year ago. It was, however, 182 under the total for the same week in 1920.

Livestock, with a gain of 1,091 cars over the week before, totaled 25,658 cars, which was 5,469 under the corresponding week in 1921, while coke showed a gain over the week before of 584 cars, which brought the total to 7,008.

Compared by districts, increases were reported in the loading of all commodities over the preceding week.

The freight car surplus for the period ending January 8 showed a further increase to 496,357 cars, of which 208,929 were box cars and 219,444 were coal cars.

Regional Conferences Proposed to Adjust Disputes with Brotherhoods

WASHINGTON, D. C.

DEFINITE PROGRESS toward an amicable adjustment of the differences between the railroads and the train service brotherhoods regarding wages and rules governing working conditions was reached at a conference of railway executives and the heads of the "big four" brotherhoods on Monday with Secretary Hoover of the Department of Commerce. It was decided, according to an announcement issued after the meeting by Secretary Hoover, to submit to the railway companies and to the train and engine service organizations the proposal that the pre-war regional conferences should be convened to consider the endeavor to adjust all questions between the railways and the brotherhoods, the conferences to be held as near to February 10 as practicable.

This was the second of the conferences called by Mr. Hoover, at the suggestion of the President, to try to bring about an adjustment between the roads and the brotherhoods that would eliminate the danger of an interruption of transportation this spring as the result of a conflict that would be coincident with the wage dispute arising from the expiration of the mine wage contracts on March 31. The first conference, attended by the brotherhood leaders and half a dozen railway executives, was held at a dinner at Mr. Hoover's residence on January 7.

The Secretary of Commerce tried to get the railroad and labor leaders onto common ground which would result, if possible, in a settlement without the delay incident to a proceeding before the Railroad Labor Board. He has also been trying to bring about an adjustment of the mine wage controversy.

The conference on Monday was attended by the same men who were at the dinner and by a number of other executives. It was held in the offices of the American Railway Association.

In announcing the result, Mr. Hoover said the conference was entirely informal and in full accord with Section 301 of the Transportation Act which makes it the duty of the railroads and their employees to try to reach an agreement before referring a dispute to the Labor Board.

"Neither wages nor rules were discussed," he said. "The sole question was on the practicability of re-establishing the conferences, thereby to facilitate the work of the Railroad Labor Board and above all to create a spirit of working good will by adjustment instead of litigation."

The railway executives were to meet in Chicago on Saturday.

REVENUE FREIGHT LOADED—WEEK ENDED SATURDAY, DECEMBER 31, 1921

District	Year	Grain and grain products	Live stock	Coal	Coke	Forest products	Ore	Merchandise L.C.L.	Miscellaneous	Total revenue freight loaded		
										This year 1921	Corresponding year 1920	Corresponding year 1919
Eastern	1921	5,842	2,545	24,631	1,459	3,881	970	47,804	42,804	129,936	.....	.....
	1920	4,050	2,793	46,710	1,640	5,167	984	36,924	44,771	.....	143,039	148,811
Allegheny	1921	2,112	2,379	29,874	3,080	2,015	1,896	35,223	33,811	110,390	.....	.....
	1920	1,614	3,207	50,931	5,753	2,460	2,217	30,655	39,671	.....	136,508	145,029
Pocahontas	1921	133	69	9,056	125	740	23	3,843	1,895	15,884	.....	.....
	1920	78	85	17,578	595	1,133	29	3,761	1,570	.....	24,829	24,764
Southern	1921	2,612	1,851	15,403	323	9,557	383	27,321	20,745	78,195	.....	.....
	1920	2,365	1,777	24,737	729	9,262	1,760	25,914	23,484	.....	90,028	86,465
Northwestern	1921	7,701	7,573	6,847	1,036	7,157	271	18,666	18,936	68,187	.....	.....
	1920	8,169	6,763	6,323	1,277	6,199	573	18,259	18,673	.....	66,536	84,021
Central Western	1921	8,620	8,522	16,770	234	3,238	611	24,616	21,677	84,288	.....	.....
	1920	9,388	7,883	21,370	242	2,412	1,953	22,414	27,663	.....	93,325	84,289
Southwestern	1921	3,055	1,628	3,081	167	4,818	729	12,588	18,088	44,154	.....	.....
	1920	3,109	1,367	4,818	50	4,556	464	12,553	21,186	.....	48,103	39,362
Total, all roads	1921	30,075	24,567	105,662	6,424	31,406	4,883	170,061	157,956	531,034	.....	.....
	1920	28,773	23,875	172,467	10,286	31,189	8,280	150,480	177,018	.....	602,368	.....
	1919	32,396	33,715	158,068	.....	35,734	12,832	.....	339,996	.....	.....	612,741
1919 figures for week ended January 1 no separation of Coke and L.C.L.												
Week ended—												
December 31	1921	30,075	24,567	105,662	6,424	31,406	4,883	170,061	157,956	531,034	602,368	612,741
December 24	1921	36,793	22,958	135,852	7,140	45,518	5,489	210,929	201,248	665,927	648,406	684,784
December 17	1921	47,383	33,861	134,842	7,145	48,690	5,535	221,163	228,384	727,003	802,271	806,734
December 10	1921	48,680	32,159	137,836	6,638	49,744	6,128	225,718	236,023	742,926	837,953	761,940
December 3	1921	47,227	31,955	137,293	6,345	48,403	5,317	227,906	243,008	747,454	882,604	789,286



A Tractor and Trailer in the Erie Freight Service

Erie Adopts Direct Freight Delivery at New York

Plan Involves Breaking Bulk at Jersey City, N. J., and Use of Auto Trucks, Tractors and Trailers and Ferries

THE ERIE RAILROAD has recently inaugurated a new method of handling freight at the Port of New York which combines the features of the store door delivery and the container car ideas for the moving of freight. Under the immediate direction of J. J. Mantell, regional manager, the plan has been developed to the point where the road now has in actual operation two inland freight forwarding and receiving stations with arrangements for the proper complement of trucks and trailers. Two additional stations are to be opened shortly, while a plan is under advisement for the extension of the present newly installed method by the utilization of breaking bulk at a transfer, transferring the freight to containers which will be moved by special container floats to a centrally located pier and then by trucks to destination or to inland stations.

Port Congestion Is Cause of Change

The method installed by the Erie is a distinct departure from that which has been in vogue in the past at New York City. Under the plan now common to the railroads entering the port, the cars of freight received at the break-up yard and destined for New York City are placed on car floats. These car floats are then taken, either by tugs or under their own power, to different freight piers on the New York shore, where the freight is unloaded and trucked in or otherwise moved onto the floor of the pier proper. Final delivery to the consignee is made by or through the consignee, who sends his trucks to the pier, where they are loaded at his expense. This has resulted in considerable congestion, due to the fact that it is not always possible to secure immediate loading of the truck, not to speak of the delays caused by the numerous rehandlings of the freight.

The plan which the Erie has now put into operation involves the breaking of bulk of all domestic freight except a few products, such as perishables and dairy products, at

Jersey City. To date this covers only freight destined for points south of 14th street in Manhattan. Instead of moving the cars across the river on car floats, the freight is transferred to automobile trucks or to tractors or trailers, which are then transported to the city by the ferries, after which the trucks or trailers travel direct to destination. At present where tractors are used, three trailers have been provided in order to keep the tractors constantly at work, thus reducing to a minimum any possible wastes due to waiting time. In this manner carload freight, which ordinarily forms about 60 per cent of the tonnage handled is delivered directly to the consignee or to an inland station, if so desired. Outbound freight is handled in a similar manner at the option of the consignee.

The outbound freight, whether collected direct from the consignee or indirectly through the inland stations, is moved by truck and ferry to Jersey City, where it is loaded into cars designated for through movement to points on the Erie or to connections with that road. In this way, only one handling by freight is necessary between the time that it is loaded upon the trucks or trailers and the time that it reaches its destination.

Proposed Extension of Plan

Although the present plan is intended to cover only the area south of 14th street, New York, it is hoped to extend it shortly so as to cover all of Greater New York and vicinity. This will be done through a utilization of the container plan of freight handling, and, in a way, will be carried forward in two steps. At first, it is planned to break bulk at the transfer, loading the freight into containers of all-steel or steel-frame construction, so built as to be handled quickly and economically by cranes. These containers will measure approximately 17 ft. 5 in. by 8 ft. by 8 ft. 5 in. They will be loaded at the transfer point on flat cars, which

will be moved to Pier H at the Weehakwen, N. J., waterfront. This pier is equipped with four electric cranes of 20-ton capacity, and is also capable of handling 125 cars at a time. On a basis of two containers to a car, this pier will have a capacity of approximately 250 containers at a setting.

After the cars are spotted on the pier, the containers will be lifted by cranes, and placed on the deck of a car float. Each car float will have sufficient room on its deck for 60 containers if placed in a single tier, and double that when two tiers are used. These car floats will then be towed to a centrally located pier on the Manhattan side, also equipped with cranes, which will remove the containers and load them up on motor trucks. The trucks will then make delivery direct to the consignee, or to inland stations where immediate delivery is not desirable or necessary. The inland stations will be equipped likewise with crane facilities so that the containers can be removed promptly and the trucks released, the containers being unloaded at the inland stations, and the freight handled as desired. In instances where the consignee is receiving or dispatching large tonnages of freight, it is expected that crane facilities will be installed at the consignee's place of business so that the containers can be handled in a manner comparable to that for the inland stations. Where this is not the case, the freight will be unloaded direct from the container onto the truck in much the same manner as it is now being done. The outbound freight under this plan will be handled in a similar manner.

Second Step Contemplates Use of Container Cars

The development of what might be called the second step of this extended plan contemplates the utilization of the

container system in connection with container cars to serve the New Jersey territory. This business is more or less short-haul business, and originates in the various industrial centers of New Jersey, such as, for instance, Newark, Passaic, Middletown, and Port Jervis. Through the use of the container-car system, it is expected to move carload and less-than-carload from these points, and other similar ones, to New York, and the reverse without rehandling. This will eliminate the breaking of bulk at any point, and will eliminate one of the heaviest expenses connected with short-haul traffic. Thus, for instance, freight destined to some particular consignee in New York City may be loaded into a container, after which the container will be moved direct to the consignee without any handling further than that performed by the cranes in making the transfer of the containers from the car to the float, and from the float to the truck. The delivery of containers will not be limited to Manhattan alone since the plan is sufficiently flexible to permit the moving of container car floats to either the Bronx, Brooklyn, or Staten Island.

The Erie's plan for the handling of freight at the port of New York has been developed by J. J. Mantell, manager of the New York region, under the general direction of F. D. Underwood, president. It has been based upon studies made of terminal operations and costs, including all details such as switching, yard work, pier handling and lighterage.

In conjunction with the United States Trucking Corporation, New York, studies were made by the road on costs of handling freight by this method, as well as possible routes to secure the most economical and satisfactory deliveries by trucks or tractors and trailers.

Further Reports of I. C. C. Work for 1921

Complaints, Formal and Informal; 444 Suspensions Asked for; Obstacles to Uniform Classification

Supplementing previous articles on the annual report of the Interstate Commerce Commission, submitted to Congress on December 7, we give herewith abstracts of those portions

referring to the Formal Docket; the Bureau of Informal Cases, the Bureau of Traffic and the chapter on Divisions of Joint Rates.

Formal Docket

Since our last report, the forms relating to the monthly operating statistics have been revised after a conference with a committee representing the American Railway Association.

The wage statistics section has been recently organized to examine and compile the monthly reports of the service and compensation of railroad employees required by our order of April 18, 1921, effective July 1, 1921. These reports are designed to meet both our needs and those of the Railroad Labor Board.

The accident statistics section prepares quarterly and annual bulletins of railroad accident statistics. The analysis of causes of accidents has been elaborated to meet the needs of those engaged in accident prevention.

To effect the more expeditious issue of our monthly and quarterly statements the use of card-punching and tabulating machines has been extended and centered in a mechanical tabulation section. A reference room is maintained for the use of the public in consulting the files of annual, quarterly, and monthly reports of carriers.

The increased duties imposed upon us by the transportation act, 1920, have necessarily increased the amount of statistical work to be done. The marked growth in the number of clerks employed by railroads frequently gives rise to the suggestion that perhaps much unnecessary information is being collected by the government. Careful consideration is given to all such comments and from time to time requirements are eliminated where the data are no longer needed. The annual report form for 1917 was thoroughly

revised from this standpoint. In 1920 the distribution of locomotive-hours was eliminated. Proposals for important additions to statistical requirements are discussed before adoption with representatives of railroads to ascertain the cost of compiling them. The importance of supplying adequate information regarding wages and hours of service as having a bearing on our analysis of railroad costs, being necessary in the work of the labor board, and assisting in the formation of an enlightened public opinion on this subject, justified the expansion of the wage statistics above referred to. Much of the accounting and statistical burden felt in recent years

	1918	1919	1920	1921
Formal complaints filed.....	456	838	1,040	1,487
Cases at issue but not set for hearing.....	21	54	146	201
Cases set for hearing but not heard.....	142	184	92	205
Cases heard but not fully submitted.....	87	234	505	714
Cases submitted.....	386	274	385	445
Cases disposed of.....	653	598	620	1,021

by railroads is due to the passage of the properties from private to public control and back again to private control.

The transportation act provides that complaints praying for reparation on account of damage caused by rates collected through the President during the period of federal control may be filed with us within one year after the termination of federal control. By reason of this provision an unusually large number of complaints was filed during the months immediately preced-

ing March 1, 1921. More than 900 such complaints were filed during February, 1921.

The formal complaints filed numbered 1,487, of which 1,307 were original complaints and 180 subnumbers, an increase of 447 as compared with the previous year. We decided 840 and 841 have been dismissed by stipulation, or on complainants' request, making a total of 1,021 disposed of, as compared with 620 during the previous period. We conducted 1,616 hearings and took approximately 185,111 pages of testimony, as compared with 1,303 hearings and 150,986 pages of testimony during the preceding period. The following statement shows certain facts with respect to the condition of our docket as of October 31 of the years indicated:

Bureau of Informal Cases

The number of informal complaints received was 7,811, an increase of 3,603. The director general of railroads and carriers filed 2,350 special docket applications for authority to refund amounts collected under the published rates, admitted by them to have been unreasonable, an increase of 552. Orders authorizing refund were entered in 1,289 cases, a decrease of 564, and reparation thereon was awarded in amounts aggregating

gating \$798,278.23. In addition, 211 cases were dismissed or otherwise disposed of without orders. The bureau also handled approximately 91,500 letters, an increase of 52,500. Many of these had the characteristics of complaints, although not so classified. Others sought general information and informal rulings upon the respective rights and obligations of the public and common carriers under existing statutes.

The provisions of section 206 (c) of the transportation act, 1920, and the ruling of the director general of railroads that so-called straight overcharge claims were included therein, largely accounts for the increase in the number of informal complaints filed and letters received.

Bureau of Traffic

This bureau has jurisdiction over all matters dealing directly with the charges for transportation and transmission, by freight, passenger, express, pipe line, and telegraph service, other than proceedings on the formal docket and complaints handled by the bureau of informal cases.

In addition to the special work of the various units of the bureau, its activities are directed toward the adjustment of controversies with respect to the legal charges under the tariffs on file with us, and of disputed rate situations involving readjustments of rates, fares, classifications and charges of all kinds. These adjustments are accomplished by correspondence and by informal conferences with shippers and carriers.

The work of the bureau has been especially heavy and important during the past year. The increases authorized in *Increased Rates*, 1920, *supra*, were allowed to become effective by the publication of supplements to all existing tariffs, the supplements containing percentage tables under which the increased rates are computed.

As anticipated, these general increases not only have called for many important readjustments of the rates themselves, but, because of the impossibility of publishing the increased rates specifically and the necessity of using percentage tables, have added greatly to the difficulty of ascertaining the legal rates and charges, thereby materially increasing the number of controversies between shippers and carriers. In the endeavor to settle as many of these controversies as possible without the delay and expense incident to formal proceedings, numerous conferences have been held, both in Washington and at other points accessible to the interested parties.

To remove the difficulties caused by use of percentage tables in increasing the rates we have required carriers to reissue their tariffs as promptly as possible and therein to state the rates specifically. Tariffs containing 432,429 pages of rates, rules, and regulations were so supplemented following *Increased Rates*, 1920, *supra*, and of these tariffs 300,220 pages have been reissued to bring them into conformity with our tariff rules up to and including September 1, 1921, the latest period available, leaving 132,209 pages yet to be reissued. This work under our instructions should be completed by March 1, 1922.

It has been our policy, in dealing with rate readjustments, to encourage such changes as would tend promptly to relieve the existing depression of business in so far as changes in transportation charges may effect this result. Pursuant to this policy we have allowed changes in rates to be published upon less than the statutory 30 days' notice in a greater number of cases under more liberal rules than heretofore.

Tariffs

There were filed 103,748 tariff publications containing changes in freight, express, and pipeline rates, passenger fares, and classification ratings; and 201,656 certificates of concurrence and powers of attorney. A large majority of these changes have resulted in reductions of charges, many of the changes being due to readjustment of rate inequalities and relationships which had been disturbed by the percentage increases.

Rate memoranda have been supplied in 6,574 cases for our use and for shippers, carriers and other branches of the government. In addition to these memoranda many informal rate quotations and verifications are made daily.

CLASSIFICATION OF FREIGHT

In our last annual report we described the consolidation of official, southern, and western classifications, effective December 30, 1919.

Many of the ratings were thereby made uniform. Another issue of the consolidated classification was filed with us during the year. The following analysis thereof indicates the degree of uniformity reached:

Less-than-carload ratings.....	10,790			
Carload ratings.....	4,940			
Total number of ratings.....	15,730			
Ratings not uniform				
Alike in official and southern.....	1,369	12.69	671	13.58
Alike in official and western.....	2,012	18.65	1,435	29.05
Alike in southern and western.....	1,906	17.66	349	7.07
All different.....	1,303	12.08	1,531	30.99
Total.....	6,590	61.08	3,986	80.69
Uniform				
Total.....	4,200	38.92	954	19.31
Total ratings.....	10,790	100.00	4,940	100.00

Representatives of the shipping public appearing at public hearings conducted by the classification committees during the period covered by this report generally have protested against any changes in classification resulting in increases, whether made to cure some patent inconsistency in the classification or for the sake of uniformity. They have particularly opposed the latter. Owing to the general increases in rates resulting from our report in *Increased Rates*, 1920, *supra*, the carriers concluded to defer special efforts towards uniformity along lines suggested in *Consolidated Classification Case*, 54 I. C. C., 1.

There has been no material change in the situation relative to state classifications. Negotiations are in progress looking to the adoption of the consolidated classification rules and items with western classification ratings and southern classification ratings for application within the states of Iowa and Georgia, respectively. The Illinois classification has been revised along the lines of the consolidated classification as to rules and items. Generally the same ratings as in official or western classification have been established therein, depending upon competition which Illinois shippers have to meet. Some delay has been, and is being, experienced in unifying the ratings between the official and western classifications. Consequently some delay has resulted in adjusting ratings in Illinois on certain commodities, notably food products and paints.

SUSPENSIONS

Upon the investigation and suspension docket, 207 proceedings were instituted, an increase of 141 as compared with the preceding year. Of these, 157 were disposed of, an increase of 124. Rate readjustments were protested and suspension asked in 444 instances, an increase of 304 over the previous year. These protested adjustments often represent not only a number of rate schedules, but many rates and many points of origin and destination. One of them involved more than 1,000 tariffs and more than 100,000 rates covering traffic between a considerable portion of southeastern and Mississippi Valley territory, on the one hand, and a large part of the United States, on the other. Of these protested rate readjustments 43 represented reductions and 401 increases.

In 168 cases we refused to suspend, in 27 the protests were received too late for action, in 14 the protests were withdrawn by the protestants, and in 28 carriers withdrew the protested schedules prior to their effective dates. Of the rate adjustments representing reductions which were protested, 11 were suspended, 31 not suspended, and 1 is still pending.

THE FOURTH SECTION

In our last annual report we stated that since the return on March 1, 1920, of the transportation systems to corporate control and the renewal of more active competition between individual carriers there had been a growing increase in the number of applications for relief from the provisions of the fourth section. That this condition still continues is evidenced by the fact that more than twice as many applications have been filed than during the preceding year.

The number of applications for relief received was 409, an increase of 208 over the preceding year. The number of orders entered was 426, of which 218 were for permanent and 208 for temporary relief. Orders granting relief in whole or in part totaled 278. Orders denying relief in whole or in part numbered 148. In 9

instances applications were assigned in whole or in part for hearing in connection with other proceedings.

Pursuant to *Memphis-Southwestern Investiga-*

tion, 55 I. C. C., 515, referred to in our last annual report, the class rates between the Ohio and Mississippi river crossings and the Gulf ports generally have been revised in accordance with the provisions of the fourth section. On commodities between the same points rates have been filed which would correct the fourth section departures existing in these rates. The commodity rates proposed for this purpose are not yet effective, pending determination of the proceeding instituted by us to determine their reasonableness. Whatever the decision may be, it will result in the establishment of rates between all of Ohio river and Mississippi river crossings and Gulf ports, by the principal direct lines between these points, which will conform to the provisions of the fourth section.

There is also in progress as a result of our decision in the *Memphis-Southwestern Investigation*, *supra*, and in other cases involving the rates in southwestern territory, a revision of the commodity rates, to, from, and between points in southeastern Missouri and Arkansas and Louisiana, the effect of which will be to remove entirely fourth section departures on the direct routes to and from points in this section. The rates which have been proposed by the carriers for this purpose are now under consideration.

The transcontinental carriers have brought to our attention great increases since the close of the war in the movement of traffic by water between the Atlantic and Pacific seaboard via the Panama Canal. A considerable portion of this traffic, it is claimed, is being diverted from the rail lines because of the lower rates accorded by the water carriers.

The rail lines are expressing concern over the situation and, for the purpose of meeting water competition, have filed applications for fourth section relief to establish rates from the Atlantic seaboard and Gulf ports to Pacific Coast terminals, also from Pacific coast terminals to certain Atlantic ports, which shall be lower than rates from and to intermediate points.

Divisions of Joint Rates

Paragraph 4 of section 1 of the interstate commerce act makes it the duty of carriers to establish reasonable joint rates and equitable divisions thereof.

In *New England Divisions*, 62 I. C. C., 513, the carriers operating most of the mileage in New England sought blanket increases in their divisions of the joint rates with connecting lines. That is to say, they urged that the divisions be treated "as a whole," without regard to the specific divisions of individual joint rates, contending that under the law "mileage is no longer the yard-stick by which divisions are to be measured," and that the disproportionate increases in the expenses of the New England roads and their financial condition, with other circumstances, justified the relief sought. We declined to grant blanket increases and found that the record afforded no basis upon which might rest a valid prescription of specific divisions. The existing divisional arrangements, however, were found to be incongruous and chaotic, and the parties to the case were advised to designate appropriate committees, so that they might "promptly submit to us proposed readjustments that will remove the inconsistencies portrayed of record and bring into conformity with the provisions of law and equity expressed in the act the divisional arrangements, individually and as a whole."

The Interest of the Employees in Railroad Earning Power*

By Robert S. Binkerd

Assistant to the Chairman, Association of Railway Executives

THE RAILROADS of the United States cannot give to the public the good service which they want to give without the whole-hearted co-operation of the railroad employees. Management and employees are genuine partners in a great co-operative enterprise. Work must be performed efficiently and in good spirit, and the employees themselves must be treated and must be convinced that they are treated reasonably, justly and humanly by the railroad companies. Despite all the controversies railway executives are looking forward again to the day when the loyalty and devotion of their employees to their company and their work will be the outstanding characteristic of the American railroad man.

Nevertheless, assuming that management makes every effort in its power, this day will not arrive until the great majority of railway employees are themselves convinced of the futility and impropriety of some of the important policies to which labor at the moment seems to be committed.

We are now suffering hard times, for which there is no quick relief in sight. These hard times spring from various causes, some of which are international in character and beyond our control. But there is a principal factor in the present depression which is within the control of the American people. That factor is found in the unbalanced relationship between the prices of farm products and most other basic commodities, on the one hand, and the prices of manufactured goods, transportation service and various other services and products on the other hand.

If the price of manufactured goods and of railroad transportation had declined as much as the prices of farm products have now declined, the farmers' purchasing power would be unimpaired. There would be substantially the same volume of domestic business and substantial normal employment in domestic manufacturing. But, by reason of the fact that manufactured goods and transportation have not declined upon an equal basis, the farmers' purchasing power is greatly decreased and an effective blockade is created against the resumption of normal business.

The attempt of organized labor to maintain wartime wage rates and working conditions which make against high output is, therefore, fundamentally unsound.

Back of this policy there is the thoroughly unsound assumption that capital pays wages. The truth is that wages are paid out of production. That production must leave, in addition to wages, a surplus for the compensation of capital and for the marketing and sale of the product. The price of the product is ultimately fixed by the consuming public itself, and sooner or later any product or service which cannot be produced or given profitably at a price which the public is willing to pay must go out of existence.

Now, it is true that the railroad service cannot go out of existence. But it is equally true that what may be charged for that service must, in the long run, be determined by the value of the commodities to be moved. The charges collected by the railroads must not be higher than will permit the fullest economical distribution of those commodities, and, therefore, for transportation, as for everything else, there is an economic limit to what can be charged. Inside of that limit must be found the wages of labor and the compensation of management and capital.

Fundamental Economic Law

Management is just as powerless as labor to avoid the compulsion of fundamental economic law. The annual trans-

portation bill of the American people is, with declining commodity values, now tending to get outside the economic limit above referred to. The cost of transportation must be reduced. This involves, among other things, the necessity of reduction in basic wages. This need not necessarily mean any decline in real wages, because, paralleled by decreases in wages in other industries, it should result in a living wage for themselves and the possibility of renewed employment for hundreds of thousands of their fellow workers.

It would be a sad mistake for the employees to believe that there is any insuperable conflict between an adequate compensation for railroad capital and a decent standard of living for railroad labor.

Disregarding the whole period of federal control, on account of its necessarily abnormal aspects, it is a fact susceptible to the easiest demonstration that the standard of living of the American railroad employee is primarily the result of the effort of capital and management. If you will look at the 20 years before the European war you will see:

That passenger traffic increased 162 per cent;

That the cost of carrying a passenger one mile decreased one per cent;

That the number of tons of freight carried one mile increased 259 per cent;

That the average receipts per ton-mile decreased over 11 per cent;

And that the compensation of the employees increased approximately 200 per cent.

Improvements in Operation

This increase in the compensation of employees was made possible because of the increase in the production power of each employee, brought about by improvements made in the operation of the railroads. Had there been no such improvements, it would have taken approximately three times as many employees, and three times as many cars and locomotives to haul a traffic which had tripled. There could, therefore, have been neither any decrease in the cost of transportation to the public, nor any increase in the wages paid to labor.

The increase which was paid to labor was the outcome of investments made by railroad management, whereby it hauled a tripled traffic with only a 75 per cent increase in locomotives; only a 61 per cent increase in passenger cars; only an 87 per cent increase in freight cars; and less than a 100 per cent increase in employees. Hence, there was created a surplus, and out of this surplus came the increase in wages and the increase in the standard of living of the railway employees.

Nothing now is more important for the interest and welfare of the employees than that the earning power of the railroads should be restored at the earliest possible date. For it must be plain to all that some of the processes by which the railroads achieved their extraordinary improvement, in the face of declining rates and advancing costs, prior to the war, are tending to become exhausted. New methods will have to be found to increase the mileage of freight cars, to decrease the expense of handling passenger traffic, and to intensify the use of the enormous and costly terminal facilities in our cities. Whatever these new methods may turn out to be, one thing is sure, and that is that they will call for the investment of enormous sums of new capital. The possibility of increasing the production power of the railroad employees and of further advancing their standard of living will, therefore, be entirely dependent upon the ability of the railroads to raise upon their credit enormous sums of money. This money cannot be raised except upon the basis of the surety of past investments and the attractiveness of the investments still to be made. An adequate earning power in the railroads of the United States is the best friend that the railroad employee can ever have.

*From an address before the Chamber of Commerce, Altoona, Pa., on January 5, 1922.

Conditions Affecting the Head of a Rail*

Modern Track Conditions and Wheel Loads Produce Overstrained Steel—A Serious Problem

UNDER CERTAIN CONDITIONS of loading every steel structure will ultimately fail. Steel rails are subject to such loads in kind and often in degree. Interest does not attach alone to conditions which affect the head of the rail, but the head is the most critical part. The rail problem is an open one and will so remain, at least, until there is a general understanding of the destructive influences which prevail and the necessary modifications made to ameliorate them.

It is not the gross load which rails carry, as such, which makes the problem a difficult one, but the manner in which the load is applied. The prime and practically the only irremediable cause of rail failures, in the final analysis of the case, is the excessive impinging pressure between the head of the rail and the tread of the wheel.

Attention Concentrated Upon Head of Rail

These remarks refer specifically to the head of the rail. It is an elementary principle in engineering practice to maintain a certain relation between the gross load and the number of square inches of metal provided to sustain it. No application of such a rule is witnessed in respect to the heads of rails. The impinging pressures, in all cases, exceed many times the permissible loads per square inch allowed in other engineering examples. While this disparity goes on increasing, no permanent relief is in sight.

In regard to the choice of steel for rails, the opportunity is open to make any desired choice, within limits. Track conditions, however, restrict the choice to hard steel—a steel which in earlier days would have been considered very hard. The softer grades will not sustain present wheel loads without objectionable deformation.

Steel structurally sound, free from interior seams and streaks, is best adapted to meet the general conditions of rail service. It is the task of the steel maker to keep inferior seaminess at a minimum, and when this is accomplished the head of the rail will be in a condition to endure wheel pressures, as favorable as falls within the ability of the steel maker to control. External seaminess of the rail may be regarded as a negligible factor since failures from such a cause have not been witnessed.

First Strains Introduced at Time of Fabrication

The first straining of the metal of a rail takes place during cooling, at the time of fabrication. Internal strains of compression are acquired by the metal adjacent to the top and sides of the head. In order to balance these compressive strains at the periphery, the metal at the interior of the head is put into a state of tension. The stresses equivalent to these strains amount to thousands of pounds per square inch. They have been measured many times in longitudinal direction. There is no reason for supposing that cooling strains of corresponding degree do not exist in lateral directions, thus subjecting the interior of the head to cubic extension.

At times these cooling strains have caused the formation of internal cracks at the center of the head and at the junction of the web and the base. Waring and Hofmann at the Altoona Laboratory of the Pennsylvania Railroad, first called attention to a shattered zone which they found along the center of the head in a new rail. Subsequent investiga-

tion showed that a similar zone existed at the junction of the web and the base in certain rails. It was further noted that these shattered zones did not extend to the hot sawed ends of the rails. The last circumstance fixed the time of their development at the cooling stage, following the last pass of the rail mill. A careful search was instituted for shattered metal in rails taken from the track which resulted in their discovery in quite a number of cases. The rails in which they were found were of high carbon steel. Shattered metal was not found in rails of medium carbon content. The widths of these cracks were infinitesimal, with no foreign substance enclosed.

Forming Internal Cracks Experimentally

Internal cracks have been experimentally formed in rails, resembling those in tires more closely than the shattering cracks which have presented themselves in rails. Steel is known to be more sensitive to thermal treatment when first cooled from the ingot than upon subsequent reheating and cooling, a circumstance which may assist in explaining the difficulty in producing at will shattered zones in rails.

After the cooling strains of fabrication are acquired, the next thing that may happen to the head of the rail is straightening at the gagging press. No instance has come to notice in which the fracture of a rail in the track could be attributed to the immediate influence of the gag. Gagging, however, profoundly affects existing cooling strains, causing their rearrangement and even reversing their values. Cooling strains of compression may be changed to strains of tension. Internal strains do not admit of being eliminated by cold bending loads. There will be zones in a neutral state, and those zones may be shifted in position by gagging. The effacement of internal strains, complete or partial, is accomplished only by annealing the steel.

Elongation in Drop Test Specifications

Rails may be tested with the head down, and the elongation measured on the running surface. Those of the heavier sections tested in this manner not infrequently rupture without developing their normal extensions. The abrupt change in cross section dimensions at the fillets under the head causes rupture to have its origin at that place, thence extending to the top of the head. In such a fracture the metal does not display normal elongation. It is possible that a heat may be rejected, not through any fault of the steel, but on account of the design of the rail.

Notwithstanding the disparity in size, comparing a rail with the locomotive which it supports, the bending stresses involved, taken by themselves alone, are not disquieting. Track tests made by the speaker in the past and recent tests by others, with different classes of engines, on rails of different weights, and on different kinds of ballast, show a range in fibre stresses which would not be considered sufficient to cause rupture. Under vertical loads rail failures may be traced to definite causes of which bending stresses are components but not the principal ones.

A particular condition which leads to large numbers of rail failures is the cold rolling of the head by the wheels. Rails reach the track in a certain primitive state of internal strain. Additional strains are at once introduced by the impinging pressures of the wheels, which go on increasing until, perchance, rupture ensues. This destructive influence

*Paper read before the New York Railroad Club January 20, 1922 by James E. Howard, engineer physicist, Interstate Commerce Commission.

is accountable for many rail failures, for which little consideration has been given.

Exterior strains of compression are necessarily opposed by interior strains of tension. The problem is how to preserve the integrity of the metal in the interior of the head, against strains of tension both lengthwise and crosswise. Failures from longitudinal strains of tension in the interior of the head result in the display of transverse fissures; those from crosswise strains of tension become split heads. No mystery attaches to the formation of either a transverse fissure or a split head; a common cause exists for each. They are the direct consequences of high wheel pressures. Together they constitute practically all the head failures of rails.

Split head fractures occur when lateral flow, penetrating the head sufficiently, encounters an interior seam or streak of structurally weak metal. A minute separation of the metal occurs—the incipient point of a split head fracture. The formation of this incipient crack gives some relief to the internal strains. Wheel pressures restore the state of strain, however, and the incipient crack is increased in size. The process is repeated and a split head fracture is thus progressively formed. Under ordinary track conditions considerable time should elapse before the accumulated internal strains become adequate to start an incipient crack. Once started the rate of development should be an accelerating one. A split head fracture may eventually extend many feet in length, possibly originating at more than one place along the length of the rail.

Data of Proper Sort Is Lacking

Evidence which would lead to the identification of an internal strain which is on the verge of causing rupture seems lacking. There is a flattening of the grain of the steel adjacent to the running surface. In cross section, a central zone shows flattening without drift. On each side of this central zone flattening of the grain occurs with lateral flow or drift toward the nearest side of the head. The split head fracture does not have its origin in this upper zone of the head, but within its influence and below where, microscopically, the grains are distorted in shape. Internal strains of thousands of pounds per square inch exist without microscopic evidence of their presence. Divested of the phenomenon of permanent set or general elongation the actual separation of adjacent particles when ruptured by shear or by tension does not reach a measurable quantity. These characteristic features which lead to rupture demand consideration. The display of inherent primitive properties occurs as a rule only in tests for acceptance of the steel.

A split head fracture is regarded as the failure of structurally unsound steel. It is believed that rails of perfectly sound steel would not display this type of fracture. If the grade of steel was too soft to sustain the wheel loads a mashed head would result, not a split head.

The dimensions of the head, even in the widest rails, admit of lateral distortion, a condition not experienced in lengthwise direction of the rail. No relief is afforded the lengthwise strains except such lateral increase in width as expressed by Poisson's ratio, that is, the lateral expansion will be from one-quarter to one-third of the direct compression.

Longitudinal strains due to normal cooling at fabrication acquire moderate values in the head; higher in other parts of the cross section. The peripheral metal of the head for the most part is left after cooling in a state of compression, the interior acquiring a state of tension.

The Question of Transverse Fissures

Stresses exceeding 20,000 lb. per sq. in. compression have been found in the upper part of the head, in rails taken from the track. The interior of the head was in a state of tension. Here are the conditions which account for the development of transverse fissures. This explanation of their occurrence

was given in the first report of the Interstate Commerce Commission upon this type of fracture, in connection with the Manchester accident of August, 1911.

Following the discovery of a shattered zone in the head of a rail, it was asserted that the proximate cause of transverse fissured rails had been found in this development. Investigation did not confirm this assertion. Transverse fissures were found in rails with shattered zones and in rails without shattered zones, also shattered zones were present in rails without transverse fissures. The results of investigation raised the doubt whether the shattered zone even shortened the life of the rail; whether diffusion of the strains from the wheel loads did not occur and thus an influence was presented which tended to prolong its life.

Possible for Railroads to Acquire

More Definite Information

The railroads are not without opportunity to acquire extended information in respect to the physical condition of the rails since the number of transverse fissures amount to some three thousand reported in one state alone, representing over 1,200 different heats. The practice in vogue of removing from the track all rails of a given heat, when a certain number have displayed transverse fissures does not constitute a corrective measure, nor does it increase the common stock of information when no examination is made of the rails removed.

There is similarity between the development of transverse fissures and split head fractures. Each is progressive in its development, each starts from a definite nucleus, and each usually requires a term of years of service before it makes its appearance as a fractured rail. Transverse fissures usually require for their display a term of four to ten years in the track, but there is no definite period within which they occur. It is a matter of track conditions, not one of time which governs the development of these fractures.

Little Known Regarding Internal

Strains in Manganese Steel Rail

Manganese steel rails display transverse *fractures* but not of the type called transverse *fissures*. Transverse fractures in these rails have their origins at the running surface and do not start at the interior of the head; in this respect they are distinguished from transverse fissured rails. The phenomenal toughness of this steel is completely destroyed by the cold rolling action of the wheels. A surface film, a few hundredths of an inch in depth, is affected. Incipient cracks are formed in this shallow film, some of which may extend downward separating the head and possibly a portion of the web, if not earlier removed from the track. A fine hair line marks the presence of such a fracture. Nothing is known concerning internal strains in manganese steel. The difficulty of machining the steel presents an insuperable obstacle.

Notwithstanding the complete loss of toughness at the running surface leading to the fracture of the entire head and half of the web, the rail will still retain toughness in the remaining part of its cross-section. In such a condition the strength of a carbon steel rail would be a negligible quantity. Absolute brittleness in the balance of its section would prevail. No lurking danger has been detected in a manganese steel rail, and from this standpoint it is a safe rail. Its ability to retain toughness under such adverse conditions makes it not only a safe rail, but the only safe rail under parallel conditions. Its superior resistance against abrasion has long been known.

Wheel Burning a Contributing Factor

A source of injury to the heads of rails, of common occurrence, is wheel burning. They constitute the most numerous group of injuries which are apparent to the eye. Fortunately they are not always as bad as they seem. At times the

hardened layers caused by wheel burning flake off. Again cracks in the steel are not arrested at the junction of the hard and soft metal but extend into the normal metal below. This extension of the cracks is a dangerous development. Rails in this condition are among those which are seemingly least affected by wheel burning. Such rails have been found on curves; cracks being formed at close and regular intervals and present on both the high and the low rails.

Wheel burning may occur in which so much heat is generated—heating such a large part of the rail—that hardening by conductivity will not take place. The term “snow burning” is used in some parts of the country having the same meaning as wheel burning, but applying specifically to the stalling of an engine in a snow drift. Under such a condition the head is so generally heated that hardening does not always take place. The severe abrasion and roughening of the surface which results on such occasions weakens the rail and leads to early failure.

Prolonging the Life of Rail

It will be realized from this review of the conditions which affect the head of a rail how serious are the influences which

are encountered when the rail reaches the track. The destructive tendencies are clearly in evidence from which no rail escapes. Rails are overstrained members. Increase the overstraining forces and rupture will inevitably follow. Decrease the overstraining forces and the lives of rails will be increased.

At best, the problem is how to prolong the lives of rails. They reach the track with a certain margin in strength and therefore of safety. This margin is weakened in all rails and in some destroyed, and all steel is breakable. There are no inexorable exigencies of service, as some would have it believed, that impose excessive demands upon steel, of such a nature that no relief is possible. The oft-repeated remark is heard that steel makers know the conditions of service and must make rails to meet them, without considering whether these demands transgress natural laws governing the strength of steel. A corresponding remark might with propriety be addressed the designers of motive power and equipment where wheel loads are established. The exhibit presented in the annual report of rail failures, of which there is no parallel in engineering literature, gives emphasis to the subject.

A Plea for Recognition of the Traveling Auditor

Writer Adds This Office to List of “Railroad Goats”
Now Including Secretaries and Chief Clerks

By A Traveling Auditor

THE communications that have recently appeared in the columns of the *Railway Age* relative to the lack of recognition given the chief clerk and particularly the letter to the editor in the issue of September 24 written by a secretary and entitled, “The Official Goats,” induce me to write a few words on another Railroad Goat—the traveling auditor.

Higher-up officers have always drawn larger salaries and continued demands by trainmen and other union members have put them in the prosperous class, but the traveling auditor is still hardworked and ill-paid. He is another example of the skilled brain worker whose services are necessary to a great business but who is treated much less liberally than the man who works with his hands.

Traveling auditors are usually appointed from clerks who have served eight or ten years in the various departments of accounting. They are then given a certain territory or number of station accounts to supervise and audit twice yearly and as many more time as the occasion demands.

A traveling auditor's duties are numerous. He must be a gentleman and at all times be dignified and courteous in his treatment of those, whose duties are under his supervision. Undue familiarity with an agent or any of his office force is frowned upon by the general auditor, as it is an unwritten law that a traveling auditor is not to accept the hospitality of an agent. When an auditor strikes a station in a town that does not boast of a hotel, he enacts the role of the Lord Mayor of Cork and fasts. He is even supposed to smoke his own cigars and not depend upon the agent's bulky and gorgeously banded, two-for-a-nickel brand.

The Work Performed by the Traveling Auditor

The audit of the account is naturally the first requirement.

The auditor sees that the agent is neither over nor short in the cash transactions, that all reports are neatly and ac-

curately rendered, records properly filed and company property safeguarded. If the cash drawer should be 17 cents short, whether through error in making change, an accounting error, or the agent's fondness for the delicacies of the season, the auditor looks very serious, impresses the culprit with his grave danger and paints a mental picture of the yawning doors of the penitentiary. If several dollars have been mysteriously mislaid, it is called a shortage and so reported to the general auditor, with a letter explaining the circumstances in detail, giving suggestions as to criminal intent involved and recommending leniency or dismissal.

A waybill is really an invoice of a shipment made out at the station from which the shipment originates and shows destination, shipper, to whom consigned, commodity, weight, rate, and the amount of charges prepaid or to be collected upon delivery of freight. These waybills have to be reported in the receiving agent's ledger, the amount of collect charges thereon showing as a debit to the account. When charges are collected, they are posted on the credit side of the ledger and must agree with the amount shown in the cash book, which in turn is supposed to balance with the amount remitted to the bank. This reporting and posting has to be checked over by the auditor and the amounts deposited verified. The agent has to show the freight itself, the cash, showing delivery has been accomplished, or some evidence that a box, crate or keg, did actually contain certain commodities.

For instance, if a shipment consisted of a box of limburger cheese, a crate of garlic or a keg of whiskey, and was received with containers empty, through theft, leakage or evaporation, (as is often the case with the last mentioned), the auditor can, by exercising his trained sense of smell, determine just what the contents have been. If, after repeated sniffs of the keg, and a once-over of the box and crate, he is satisfied that pilfering has been done, the agent is relieved of the charges shown on the waybill by a special credit

and an investigation is indulged in to find out what gentleman with an Italian appetite, or with an uncurbed fondness for liquid refreshments, is on the pay-roll.

An inexperienced agent, if dishonestly inclined, often makes the mistake of thinking he can collect charges on a waybill, pocket them and by destroying the waybill get rich quick. This is an error of judgment that agents soon find is disastrous to them, as they fail to take into consideration that all waybills are checked from the forwarding station, and if not shown on station reports to which destined, an immediate investigation is made.

After the freight accounts come the tickets. An agent is charged with a certain number which he has to have on hand or be able to show have been sold and proper fare collected and remitted. Irregularities in these accounts are easily detected, as all tickets are numbered consecutively and each number must be accounted for.

A final balance of all ledgers and a grand summary of all business done, showing to a conclusion that all waybills, adjustments, tickets and cash, has been accounted for, completes the financial part of the audit.

Between Three Not Two Fires

The traveling auditor then answers about 75 questions on a personal report, covering general conditions, the efficiency of the agent and office force, together with observations as to the cause of irregularities, if any. The agent's neatness, cleanliness and morality are noted. If the report is favorable, the general auditor calls the T. A. down for not discovering a shortage or other irregularity. If unfavorable, the superintendent jumps on him for picking on the men on his division and if it is just between the two, the agent greets him on his next visit with an injured air and the question, "Why didn't I receive a letter of commendation, as a result of your last audit?"

There you are, the harassed T. A. is up against it which ever way he turns.

As an Instructor, Commences with Multiplication

As an instructor, this traveling phenomenon is supposed to know everything about the railroad business. He must be able to take charge of a station efficiently in an emergency and answer the calls and needs of other departments besides the accounting. He instructs raw material in the first step to a railroad presidency. He scolds, coaxes and pleads with the boy from the farm, whom the superintendent picks up, gives a uniform of brass buttons, a cap with "Agent" in near-gold letters on the front and tells, "If there is anything you don't know, and want to know about, send an S. O. S. for the traveling auditor."

In many cases, the auditor has to commence with the multiplication table (most of the embryo agents know their A. B. C.'s) and step by step under the watchful and guiding eye of their teacher, the subjects rise to positions of great responsibility with salaries many times greater than that of the poor, patient, plodding representative of the accounting department.

The ability to administer proper encouragement and to give sound advice is, besides a portfolio of blanks, pencils and a ham sandwich, part of the traveling auditor's equipment. He buoys up the agent with praises as to his unusual aptness, whether deserved or not. He shows him how to prepare his reports and how not to prepare them, encourages him to keep all records up-to-date and helps him do it. He shows him also how to facilitate the preparation and rendering of reports from the accounting department to the president each month. He enthusiastically pictures success and promotion, which strict attention to minor details of the work, as well as the general duties, will warrant. He even listens sympathetically to the domestic troubles of the agent, such as his wife's fondness for the movies to the neglect of the tooth-

cutting embryo agent and her hardworking husband. He not only listens but suggests remedies.

The traveling auditor is being continually called upon by the general auditor to criticize prevailing methods of accounting with a view to improving and devising efficient short-cuts, and securing the maximum result with minimum labor and time. It is necessary for him to keep in touch with the agent's method of living, his associates and to be quick in investigating the source of an unusual display of wealth on the part of an agent whose salary will not warrant it. He is not only an auditor but he is an instructor, a Sherlock Holmes, a sympathizing parent and an ever-present help in time of trouble.

No Eight-Hour Day

No eight-hour day with pay for overtime is allowed. The T. A. has a certain number of offices to audit twice yearly, besides taking care of transfers of agents, in which latter cases a thorough audit is made to allow the incoming agent to start with an absolutely clean slate. This means hard work, early and late, and the T. A.'s work is far from completed when he reaches his headquarters at night, as he then has to make out his daily report of activity, schedule for the next day, answer correspondence and maybe take an unofficial trip out on the division to help some poor agent make out a balance sheet, or locate a difference.

The attitude of an agent, cashier or accountant, especially at the smaller agencies, to a traveling auditor, is usually antagonistic. This is a great handicap, as the agent can, when so minded, help along considerably by volunteering information, as to the why and wherefore of different adjustments and entries. This reticence to meet the auditor halfway and expedite the work of the auditor, usually makes it less pleasant for the agent, as the longer an auditor pokes around through the account, the more little irregularities he finds, while if the agent is helpful, the cash balances and reports are neatly and accurately rendered and all questions answered cheerfully and promptly, the auditor is more than likely to assume responsibility for the correct performance of minor duties without an investigation. Of course, the figures are there and all transactions must be verified, but it takes less time to verify a condition than to develop and then verify it.

Does Not Pay to Regard Agents With Suspicion

In my earlier experience, I was taught to consider all agents and cashiers as second-story men, but I soon found that method unjust, as well as a handicap to my work. If an agent sees he is regarded with suspicion, he naturally resents it and puts all kinds of obstacles in the way of a speedy audit. If he is kept in good humor and treated as a respectable business associate, and if possessing any intelligence at all, he is only too glad to do all he can to shorten the auditor's visit. When a shortage or any serious irregularity, which has taken some time to develop, is found, there is a bare possibility that the auditor will receive a letter from the general auditor commending him on his work, but the chances are in favor of a curt note, requesting advice as to why it was necessary to spend so much time at a station that usually requires but a short time to audit. They work on schedule in the general office, 9 a. m. to 5 p. m., with half holiday Saturday, and any deviation caused by exceptional conditions on the road, cannot be understood. It is thought that if some previous audit was made in a day, all subsequent audits should be made as speedily, there apparently being little conception of the diabolical mess an untutored agent can get an account into.

A small account is not necessarily the easiest to balance. In fact, I have had more headaches over accounts kept at a one-man station than over those at larger stations, where it took a month to strike a balance.

The Comforts of Travel

The operating department, from the general manager down, thinks a traveling auditor has a wonderfully good time, traveling around seeing the country, but they do not take into consideration the hardships with which he has to contend. The traveling auditor has no private car but is dependent on regular passenger trains, the schedules of which are unfortunately arranged for the convenience of the traveling public. It means no regular hours, meals at random and hotel beds, where the springs have escaped their mooring and bulge up here and there, making it necessary to practice the convolutions of a snake to enable one to lie in them and sleep the troubled sleep of the just. Then in the small town, there are the hotel rooms with the musty neglected odor, that probably have not been occupied for months, except by tiny unwelcome visitors whose company would sooner be foregone.

There is not much time for recreation, as an auditor is subject to call, Sundays and holidays, and he must at any hour be ready to pack his grip and sally forth.

An auditor doing the same class of work in other lines and under similar conditions, could demand \$10,000 a year and get it. Railroad accounting is more complicated and has more detail work than any other. You ask, why then doesn't he go to work for some commercial concern? Simply because his entire training has been in the railroad business, probably ten years in a clerical capacity, before he is eligible for the intricate duties of an auditor. He gets in a rut, subdued by his lack of adequate compensation and consideration and he feels that he cannot do commercial auditing. He could, however, and it would be easy after his railroad training. In justice to the man of the road, the minimum salary should be \$6,000 a year, ranging from that to \$10,000, according to experience and length of service.

A Comparison with Accounting Office Chief Clerks

Chief clerks in the accounting department receive better salaries than do the traveling auditors and their duties cover supervision of but one class of the accounting work. They are not supposed to be conversant with the workings of another department; for instance, the chief clerk of the freight accounts has nothing to do with the ticket accounts, and vice versa. The chief clerk in charge of claims and adjustments would not necessarily have to know what a freight or ticket

balance sheet looked like, while a traveling auditor has to have an intimate and working knowledge of all this, besides numerous other details at the stations with which chief clerks never have to worry.

I do not wish to deprecate the value of chief clerks as they have great responsibilities and are well worth all they receive, but is it not reasonable to assume that the traveling auditor, whose knowledge embraces all departments of accounting, should at least have a salary equal to that of those whose duties end in one department?

I personally know one chief clerk, who asked one of his assistants what an advance charge on a waybill meant. Another chief clerk of tickets, upon seeing some Pere Marquette abstracts headed, "P. M.," wondered why it was all those reports were prepared in the afternoon, thinking that was what "P. M." stood for. These men were both efficient and knew the workings of their department from A to Z, but there it ended.

Suggests a Voice as to Appointment

and Promotion of Agents

A traveling auditor should be recognized by the various departments as something more than a necessary evil. A most excellent move would be to give him a say as to the promotion and appointment of agents. Having authority in this respect would insure a better feeling between agent and auditor and the agents would then work with the auditor, instead of against him. Certainly the latter has a better idea of men with whom he comes in direct contact.

There has recently been organized a traveling auditors' union. It is thought by some that it is non-ethical for a supervising official to belong to a union but from results already obtained in the way of increased compensation, it is a question whether upholding ethics is paramount to the embarrassment of an unpaid grocery bill.

Due to the fact that all of my energy is needed in an attempt to check the progress of a few million tubercular germs, I am probably out of the game for good, and will check no more railroad accounts but I feel, from my experience as a traveling auditor for 12 years, that too little is actually known by higher officials of the man who does so much toward making efficient agents, insuring correct accounting and safeguarding railroad revenue.



Photo by Kadel & Herbert

Yard at an English Colliery

General News Department

A Freight House of the Chesapeake & Ohio at Norfolk, Va., was damaged by fire on January 13; estimated loss \$75,000.

The American Society for Testing Materials announces that its twenty-fifth annual meeting will be held at the Chalfonte Hotel, Atlantic City, N. J., beginning on June 26 next.

Professor William Z. Ripley, of Harvard University, is to lecture at the Polytechnic Institute of Brooklyn, New York, on Tuesday evening, January 24, on "The National Railroad Situation." The auditorium of the Polytechnic Institute is at 99 Livingston street, near the Borough Hall. This lecture is one of a course given at the Institute on National problems in their relation to the industries of greater New York.

The Summary of Wage Statistics, issued by the Interstate Commerce Commission for the month of September, 1921, compared with August, shows an increase of 38,403 in the number of employees of the railroads of the country as of the middle of the month, while their total earnings decreased \$3,773,073. The number of employees was 1,718,330, and their total compensation was \$223,972,822. The decrease in earnings is said to be due to the fact that there were 27 working days in August, while there were only 25 in September. The statistics do not include the Detroit, Toledo & Ironton, which had not yet filed its report.

A Census of Safety Workers

The National Safety Council, Chicago, is now taking a census of those who are directly charged with the duty of promoting safety through inspection, safety investigations, safety education, control of health hazards, or similar work in industries and on the railroads. This is the first time any attempt has been made to obtain a census of the persons engaged professionally in the safety movement.

C. E. Denny Predicts Revival of Railroad Construction

C. E. Denny, vice-president and general manager of the New York, Chicago & St. Louis, in an address before the annual convention of the Associated General Contractors at Cleveland was reported in the daily press as predicting that the railways of the country will do more construction during the first six months of the current year than in any similar period since the beginning of federal control. Furthermore, the press reports said, he stated that there would be greater activity during the last six months than during the first.

Baltimore & Ohio Consolidates Divisions

Effective Jan. 1, the Indiana and Illinois divisions of the Baltimore & Ohio were consolidated into the St. Louis division, with headquarters at Washington, Ind. The mileage of the new division will be approximately 640, and it will be composed of the main line and the branches between Cincinnati, Ohio, St. Louis, Mo. This will include 400 miles of the original Illinois division with the branches to Springfield, Ill., and Shawneetown, and 240 miles of the Indiana division including the line to Louisville, Ky.

New Postal Buildings at New York City

The Postmaster General has been authorized, following extended preliminary negotiations, to contract with the Pennsylvania and the New York Central for the use of large new buildings, to be put up by these railroad companies, on the west side of New York City, for the accommodation of the postal service. The New York Central plans to put up a building at Tenth avenue and Thirtieth street, providing 356,400 sq. ft. of space, the rental to be \$1.45 a sq. ft. The Pennsylvania is to put up a

building above its tracks in the rear of the present general post office, Thirty-second street and Eighth avenue, to provide 592,000 sq. ft. The rental is to be \$1.70 a sq. ft., the estimated cost of the building being \$10,000,000.

Accident Bulletin No. 80

The Interstate Commerce Commission has issued its eightieth bulletin of statistics of railroad accidents; it is for the three months ending with June, 1921. In that quarter the number of persons killed in train accidents was 88 and of injured 942, as compared with 128 killed and 1,984 injured in the same quarter of 1920. Adding the casualties in train service accidents the totals for this quarter are 1,268 persons killed and 9,511 injured, as compared with totals in the same quarter of the former year of 1,451 killed and 14,367 injured.

Of passengers killed in train accidents, the total in the quarter now reported is 24, as compared with 29 a year ago; passengers injured, 603 this year, 1271 last year.

Nominations for Labor Board Soon

As the time approaches for the expiration of the terms of three members of the Railroad Labor Board, A. O. Wharton, representing the employees; J. H. Elliott, representing the railroads, and G. W. W. Hangar, representing the public, the candidacy of several prominent labor leaders have been announced. B. M. Jewell, president of the Railway Employees' Department of the American Federation of Labor, will be the Federation's candidate to succeed Mr. Wharton, according to reports circulated on January 16. At the Labor Board it was stated that Mr. Wharton will also be a candidate for renomination. All of the nominations to fill vacancies on the Board are to be presented to President Harding on March 1.

Celebrating Franklin's Anniversary

The month of January has been designated as "Thrift Month" by the Chicago, Rock Island & Pacific. Special posters have been put up in all the shops, roundhouses, and offices of the system, urging employees to "Save Today and You Will Have Something Tomorrow." The January issue of the Rock Island magazine is called the "Thrift" Number. It contains articles by prominent bankers, United States Treasury officials, officers and employees of the road. "Thrift and Savings" were made a feature of a special meeting held on January 11 at Chicago, attended by both officers and employees of the company, when George S. Hovey, president of the Interstate National Bank, Kansas City, Mo., delivered the main address.

Mr. Hoover on Electrification

Herbert Hoover, Secretary of Commerce, made special reference to the subject of electrification at the annual meeting of the American Engineering Council of the Federated American Engineering Societies, held at Washington, D. C., on January 5 and 6. Mr. Hoover stated that he thought of electrification as one of the biggest problems confronting the country, and suggested that the engineers tackle this problem in the form of a waste survey. Such a survey, he said, afforded at this time great possibilities in the direction of effective leadership in the elimination of waste. The proposed superpower area along the Atlantic seaboard in the region between Boston and Washington was the starting point, he said, for prodigious development in consolidating the electrical powers of the country along national lines which would affect every village and hamlet, combine into super-power stations thousands of minor electrical plants with millions of horsepower and result in tremendous savings to industry.

Dispatchers' Chief Scores Hoover Conferences

The Hoover conferences in Washington between labor leaders and members of the Association of Railway Executives constitute an "attempt to establish a super Railroad Labor Board," and will impair the prestige of the Board functioning under the Transportation Act, according to J. G. Luhrsens, president of the American Train Dispatchers' Association.

"At a time when the Labor Board must fight to have its powers determined in the federal courts (referring to the injunction suit brought by the Pennsylvania), we have a cabinet officer setting himself up as an intermediary between litigants, past, present and prospective, before the Labor Board," said Mr. Luhrsens in a statement issued on January 16. The statement contends the outcome of the Pennsylvania suit should be awaited and that railway employees should meanwhile keep their faith in the United States Railroad Labor Board.

Common Officers for Various

Pennsylvania Companies Allowed

The Interstate Commerce Commission has issued an order comprising 50 typewritten pages authorizing common officers and directors among the various companies affiliated with the Pennsylvania System. In the original order Charles E. Ingersoll was authorized to hold until further order the positions of director of the Pennsylvania Railroad, the Pennsylvania Company, the Philadelphia, Baltimore & Washington, and president of the North Pennsylvania, and either the position of director of the Missouri Pacific or president of the Midland Valley. He was given 30 days to make his election which position he will hold. Later the commission issued a supplemental order authorizing Mr. Ingersoll to hold until further notice all of these positions.

Shop Employees Decide Not to Take Strike Vote

No strike vote will be taken by shop employees as the result of the Labor Board's recent rulings on the working conditions of these employees, according to an announcement made on January 15, by B. M. Jewell, president of the Railway Employees Department of the American Federation of Labor. A committee of shop men has been considering the new shop craft rules and it was decided to ask the Railroad Labor Board for a rehearing on some of the new provisions. Particular objection was raised to the rule eliminating punitive overtime for Sunday and holiday work for those employees necessary for continuous operation.

"As the rules now stand, they may mean anything," Mr. Jewell said. "We want the board to interpret them so we can tell just what they mean. Therefore, we are going to reopen the case and find out just where we stand before we act."

Burlington Establishes Pension System

The Chicago, Burlington & Quincy has followed up its announcement of December 1, indicating that the road was about to inaugurate a pension system, with a circular to the employees of the road, dated January 1, giving the plan and the conditions under which it is to be operated. The plan provides that, after a continuous service of at least 20 years, pensions may be granted to trainmen, enginemen, yardmen, and foremen in track and bridge service, who have reached the age of 65 years, after an examination by the Pension Board, and to all employees after the age of 70 years is attained, except when upon application of such employees and in the judgment of the Board their service does not demand retirement. In the event of physical disability before the age limit has been reached, pensions may be awarded after a continuous service of 25 years. The pension allowance per month is based upon the average of the monthly wages received for the ten years preceding retirement and is set at one per cent of that amount for each year of continuous service, but in no case is the allowance to be less than \$1 for each year of continuous active service nor less than \$25 per month, and in no case greater than \$150 per month. The entire cost is to be paid by the company without contribution by the employees. The Board of Pensions as appointed for the first year is as follows: Chairman H. R. Safford, vice-president; E. P. Bracken, vice-president; W. F. Thiehoff, general manager; F. A. Torrey,

general superintendent of motive power; H. W. Johnson, controller; and secretary, J. N. Redfern, superintendent, relations and employment department.

Mr. Schwab Pleads for the Railroads

Charles M. Schwab, chairman of the board of the Bethlehem Steel Corporation, speaking before the Ohio Society of New York at its annual meeting on January 14, told his hearers some incisive truths about the railroad situation. He said, in part:

"The greatest of American interests next to agriculture is that of transportation. I have been told that it would take five billion dollars to put our transportation companies abreast of the commercial requirements of the nation and to make up for their inability to expand and progress during the last few years. Our railroads for the last two years have abandoned more miles of track than they have built, and have probably retired from service more freight and passenger cars than they have installed. In a country like ours, with its great future still ahead of it, that is an impossible situation.

"We have imposed upon our railroads a network of laws and restrictions which has made their rates no longer responsive to the changing commercial needs of the country. The way to get results in life and in industry is to put your faith in men. We should stop knocking our railroad presidents. The railroads have had an awful drubbing such as no other industry has ever gone through. There have been evils in the past, but the damage done through the laws which have been passed has been infinitely greater than all the material harm due to the financial scandals. We should of course prevent evil and scandal, but we must also be careful not to stifle progress.

"But no matter what has taken place in the past, I am firmly of opinion that no finer and more conscientious lot of men was ever attempting to discharge their duties to the public under difficult conditions than the men who are today running the railroads of the United States. Do you know a single one who does not deserve your implicit confidence? They are not speculators; they are not grafters; they are high minded public servants deserving of public trust and of public enthusiasm. There isn't a man today at the head of an American railroad who is not a credit to the industry and an asset to his country. . . . Let us back our railroad officers as the manager of a great industry would get behind his department heads. At every turn they are hemmed in by restrictions which prevent the exercise of the sound business judgment which has grown out of their long experience. You never make progress by ham-stringing ability and initiative, and no industry ever gave good service long if it wasn't prosperous itself. . . . Maintain such regulations of railroads as actual experience shows to be justified, but abandon all the regulation which is based merely upon political motive and popular prejudice."

New A.S.C.E. Constitution to Be Given a Chance

The sentiment as expressed by those attending the annual meeting of the American Society of Civil Engineers held on Wednesday, January 18, through the medium of their votes, indicated a desire on the part of the members to give the newly adopted constitution of the society a chance to show what results it can produce. Two groups of amendments came before the annual meeting, the first group being introduced with the approval of the societies' counsel for the purpose of clarifying some inconsistencies in the constitution. This group was approved by the meeting and will be sent out for letter ballot with that approval. The second group dealt with numerous changes which it was hoped would tend to further and advance the local activities of the society. In the discussion regarding the second group of amendments it was brought out that the board of direction had been and was still continuing to give the subject of local activities serious consideration; that the revised constitution had been revised at a considerable cost, and much effort and study had been expended upon it to improve it and in particular those sections which dealt with local activities. It was urged that since this constitution had only been in effect since November 5, 1921, the time elapsed had not been sufficient to judge accurately just how well it was going to come up to expectations and that therefore at least a year should be allowed to pass before any amendments, such as in the second group, were considered. It was voted to send out the amendments for letter ballot with an adverse recom-

mentation. A call for a division of the meeting into members from District 1 and from all other districts showed that there were 223 members present from District 1 and 150 from the others. Honorary memberships were presented to Samuel Rea, president, Pennsylvania Railroad; Charles Prosper Eugene Schneider, Paris, France; Luigi Luiggi, Rome, Italy; Ambrose Swasey and Howard A. Carson.

Supply Men's Association Announces

June Convention Details

J. D. Conway, secretary of the Railway Supply Manufacturers' Association, has sent out invitations and exhibit blanks for the convention of the Railway Supply Manufacturers' Association to be held June 14 to 21 on Young's Million Dollar Pier, Atlantic City, N. J., in conjunction with the meeting of the American Railway Association, Division V. The communication which is designated "Official Circular No. 1" says that it is anticipated that "we will also have Division VI, Purchases and Stores, join with us." The circular says that though it was considered advisable to cancel the convention scheduled to be held in June, 1922. A general canvass of the manufacturers shows that they very largely favor an exhibit, and "the many inquiries we are receiving evidences a greater interest than in any previous year."

The circular gives complete details concerning the exhibit. The track exhibits will be arranged for as usual and a number of changes have been made on the pier which it is believed will improve its exhibit conditions.

New York Central Veterans

The Metropolitan Chapter of the New York Central Veterans' Association is the name of the old-timers' organization recently established by New York Central officers and employees in New York City. It is open to all who have been with the company fifteen years or more, and was launched with more than 500 charter members. A. S. Lyman, General Attorney, was temporary chairman of the organization meeting. Lieutenant Colonel William L. Burnett, assistant conductor on the Electric division, was elected president; William O. Wichman, engine man on the Electric division, vice-president; J. M. Wooldridge, chief clerk to the General Attorney, secretary-treasurer, and Fred T. Slack, inspector of passenger service, historian. It is expected that veterans at Albany, Buffalo and other centers also will form chapters.

Chauncey M. Depew, chairman of the Board of Directors and one of the charter members of the new association, in a letter to his fellow veterans said in part:

"On the first day of January, 1922, I completed 56 years of service in the company. That I am in about as good shape in this January, 1922, as I was in January, 1866, is a tribute to the health and happiness and longevity which comes from service in the New York Central. . . . Every organization is divided into boosters and knockers. A knocker is one who is dissatisfied with everybody above him, everybody around him, and especially, with the organization with which he is working. A railroad man should leave criticism and complaints against his job to the commuter, the shipper, the politician and the fellow who cannot get on the payroll.

"The booster is always healthy, always happy, and always cheerful. He helps others and in that way helps himself. He has pride in his organization, pride in his train, pride in his locomotive, pride in what he believes can be done by his company better than by any other in the world. A knocker is a poor citizen; a booster is a good one."

President A. H. Smith, addressing the meeting, said that the difference between officers and me is an invisible line; the officers are of not much consequence without the men behind them, and to have the men behind them, if they are willing and earnest, is what gets the answer. Mr. Smith praised warmly the spirit of patriotism and loyalty that enabled the railroad workers to accomplish seeming miracles during the terribly cold winter of 1918, when the country was at war and the Allies calling for munitions. "You will never get the credit, because credit does not come after those troubles are over, but I know it and you know it, and it is perhaps sufficient that we do know it. As long as I live, I never can find words to express to you and the others my appreciation of the efforts then put forth."

Traffic News

The Transportation Club of Flint, Mich., at its annual meeting on January 12, elected the following officers: President, F. A. McHale; vice-president, L. F. Burckart; secretary, Paul Heyer; treasurer, J. E. Clark; board of directors, E. F. Bilo, John S. Gibson, F. J. Shepner and V. A. Rogers.

The Industrial Traffic Club of Portland, Ore., at its annual meeting on January 4, elected the following officers: President, W. H. Sainsbury; vice-president, F. G. Donaldson; secretary, F. P. Kensinger; treasurer, F. A. Baker; directors, J. L. McConnell, W. O. Rogers, R. C. Long, F. L. Miller and T. H. Spencer.

The Federal Trade Commission will open a hearing on January 30 at Milwaukee, Wis., on the "Pittsburgh plus" case. This case was initiated in 1919 by the Western Association of Rolled Steel Consumers, and since that time the American Farm Bureau Federation, the National Association of Purchasing Agents, the Southern Association of Rolled Steel Consumers, and the legislatures of Illinois, Wisconsin, Minnesota, Iowa and Missouri and the state senate of Georgia, have joined with this company to fight the case.

The differential system of making passenger fares between New York and Chicago which prevailed prior to federal control was re-established on January 1 by the lines other than the New York Central and the Pennsylvania, when the Interstate Commerce Commission failed to suspend the tariffs filed by the former "differential" lines, although urged to do so by the two "standard" lines. In filing the tariffs providing for the reduced rates the roads said they had lost a large share of their through passenger business after their fares had been put on the same basis as those of the New York Central and the Pennsylvania.

The American Short Line Railroad Association, through its Bureau of Tariffs and Printing, announces that in order to give prompt service to its patrons in the Western territory, the National Reproduction Company of Chicago, has been engaged to print 1,200 pages of planograph matter daily as required. Western Trunk Line Territorial Directory No. 1-A of 350 pages was recently reproduced in four days, and in emergency this time can be reduced. Experienced tariff men are now on duty in the Chicago office, and the time required for the communication and handling of Western orders will be reduced. The Chicago office is at 5 North Wabash avenue, and the manager is I. T. Hanson.

The ninth annual meeting of the Southern Hardwood Traffic Association was held at Memphis, Tenn., January 6. J. H. Townshend, secretary-manager of the association, was delegated to "obtain rates, route all freight traffic from and to all points and handle traffic matters generally" for nearly 100 different companies and it is expected that he will receive authority from 225 additional firms within a few days. S. M. Nickey, president of the Green River Lumber Company, Memphis, was re-elected president of the association; vice-presidents for the district offices were elected as follows: J. F. McSweyn, Memphis; S. W. Richey, Cincinnati, Ohio; E. A. Norman, Jr., Louisville, Ky.; L. E. Moore, New Orleans, La.; A. C. Thompson, Helena, Ark.; Elliott Lang was re-elected treasurer. The directors re-elected Mr. Townshend, secretary-manager and J. V. Norman, of Louisville, Ky., as general counsel.

The American Farm Bureau Federation has announced a program which it proposes to submit to the national agricultural conference to be convened at Washington on January 3. This will suggest immediate reductions in freight rates, all savings in operating costs to be further reflected in further rate reductions until the entire increase of August 26, 1920, is wiped out, and repeal or amendment of the Adamson law. The conference will also be asked to declare for the repeal or amendment of the Esch-Cummins law so as to abrogate what is called the "guaranty" clause, and to "revitalize the

Railroad Labor Board and co-ordinate wage-making powers with the rate-making power of the Interstate Commerce Commission." J. E. Gorman, president of the Chicago, Rock Island & Pacific, has been invited to attend the conference as a representative of transportation.

Shippers in New York and Boston, and other Atlantic seaboard territory, following a recent meeting in New York City, have organized a committee to protest, at Washington, against any increase in freight rates which shall put eastern territory at a disadvantage compared with Chicago; the argument being that the Interstate Commerce Commission, unless restrained, may authorize important reductions from Chicago while not allowing similar changes from eastern cities. W. H. Chandler, of Boston, manager of the Transportation Bureau of the Boston Chamber of Commerce, was appointed chairman of a committee to follow the hearings which are to be given by the Interstate Commerce Commission. P. W. Moore, secretary of the shippers' conference committee and manager of the Traffic Bureau of the Queensborough Chamber of Commerce; E. Grace, of the Brooklyn Chamber of Commerce, and W. J. Banham, traffic manager of the Otis Elevator Company, are to be other members. Mr. Banham will serve as New York chairman.

The National Industrial Traffic League will hold a special meeting at Washington, D. C., on January 27, to consider the report of the legislative committee, suggesting certain desired changes in the Transportation Act. At the same meeting the general rate inquiry of the Interstate Commerce Commission which will be resumed on January 11, will be discussed and the attitude of the league's witnesses before the commission will be decided. J. H. Beek, secretary of the league, at Chicago on January 5, said: "The rate reductions which have been made voluntarily by the carriers or ordered by the commissions since April 26, 1920, have been largely for the benefit of specific commodities. The National Industrial Traffic League favors reductions in all rates, both class and commodity, made upon a percentage basis if the commission finds that a reduction is warranted. When the rates were advanced they were advanced on a percentage or horizontal basis and if rates are to be reduced we believe they should be reduced in a similar manner."

The Pennsylvania Railroad announces new arrangements concerning the stop-over privilege. The passenger must apply to the conductor of the train entering the place where the stop-over is to be made, and ordinarily the ticket must be deposited by the passenger with the station ticket agent immediately on arrival, but all-year tourist, summer tourist and winter tourist tickets will permit stop-over at any point without deposit. On one way and 30-day round trip tickets a stop-over, not to exceed ten days, will generally be allowed. The passenger may enjoy the stop-over privilege at as many authorized stop-over points as he may desire. In general the cities authorized as stop-over points are as follows: Akron, O.; Baltimore, Md.; Buffalo, N. Y.; Canton, O.; Chicago, Ill.; Cincinnati, O.; Cleveland, O.; Columbus, O.; Cumberland, Md.; Dayton, O.; Detroit, Mich.; Elmira, N. Y.; Ft. Wayne, Ind.; Hagerstown, Md.; Harrisburg, Pa.; Hibbard, Ind.; Indianapolis, Ind.; Lima, O.; Louisville, Ky.; Mansfield, O.; Marion, O.; Mayville, N. Y.; New York, N. Y.; Philadelphia, Pa.; Pittsburgh, Pa.; Rochester, N. Y.; St. Louis, Mo.; Salamanca, N. Y.; Sandusky, O.; Springfield, O.; Toledo, O.; Valparaiso, Ind.; Warren, O.; Washington, D. C.; Watkins, N. Y.; Wheeling, W. Va.; Wilkes-Barre, Pa.; Wilmington, Del., and Youngstown, O.

The Long Island Railroad, in presenting its argument for enough income to enable it to properly expand its facilities so as adequately to deal with an increasing volume of freight traffic is able to use a striking and concrete example, namely, the great activity in construction of new buildings throughout the territory served by the railroad—which territory has no other railroad. In 1921 these buildings have numbered 11,000, a total much larger than in any previous year. The railroad delivered 111,868 tons of brick, or more than twice the quantity recorded in 1920, and very large increases are recorded in cement, lumber and other articles. Speaking to the "Knot Handlers," a club of lumber dealers, and alluding to other figures, Donald Wilson, general freight agent of the road, emphasized that the railroads are generally sick abed, and need the sympathy and co-operation of

the public, who pays the bills. The governmental bodies which regulate both wages and rates, do not always assume responsibility as to the successful operation of the roads. There is an idea in the minds of many people that the freight rates on building materials are so burdensome that building construction has consequently been limited; but a well-known architectural engineer has recently analyzed the owner's direct building costs, and finds that only 8.3 cents of each dollar spent in the construction of a typical industrial building goes toward paying the freight charges on building materials.

Coal Production

Production of soft coal recovered appreciably during the first week of 1922, according to the weekly bulletin of the Geological Survey. The output is estimated at \$7,460,000 tons. The New Year holiday was observed in some districts but not in all.

The joint international commission of the governments of the United States and Canada has submitted to President Harding a report which he has in turn transmitted to Congress, containing a comprehensive proposition for the improvement of the St. Lawrence River between Montreal and Lake Ontario, as well as the completion of the new Welland ship canal, the connecting link between Lakes Ontario and Erie. The cost is estimated at over \$250,000,000 for the work on the St. Lawrence and \$60,000,000 for the Welland improvement. The purpose is to open up a waterway which will enable ocean vessels to pass into the Great Lakes, and the commission recommends a draft of 25 feet in the canals and 30 feet in the sills of the locks.

Anthracite Shipments for December

The effect of the abnormally mild temperatures that existed during December, and the general industrial depression are reflected in a decrease of approximately 1,800,000 tons in the shipments of anthracite as compared with the corresponding month of 1920, and of nearly 680,000 tons as compared with November. Shipments last month (4,635,922 gross tons) were the smallest since September, 1920, when the "vacation" strike of the mine workers reduced the shipments to 3,592,954 tons.

The total shipments for the year 1921 amounted to 67,617,713 tons against 68,627,125 tons in 1920.

Shipments by initiating carriers were as follows:

	December 1921	December 1920	November 1921
P. & R.	985,262	1,324,004	1,017,409
L. V.	801,796	1,161,305	913,737
C. of N. J.	532,597	497,735	512,613
D. L. & W.	626,377	940,515	814,131
D. & H.	654,987	896,475	756,598
Penna.	307,520	457,242	429,638
Erie	450,465	675,979	503,488
N. Y. O. & W.	107,107	164,557	136,945
L. & N. E.	169,811	318,508	229,455
	4,635,922	6,436,320	5,314,014

Light Hay Movement Due to Other

Factors Than Freight Rates

A general review of the hay market situation just completed by the Department of Agriculture shows, according to its publication "Weather, Crops and Markets," that while the movement of the marketable surplus of hay to December 15, 1921, was considerably less than normal, the cause is not entirely attributable to freight rates, as has frequently been asserted. This publication says:

"There are several other important factors, such as high marketing costs, mild weather in several important consuming sections, local forage, and general business depression. Marketing costs including the freight, total more in many instances than the amount received for the hay. Baling charges have been reduced about \$1 to \$1.50 per ton, baling wire is less expensive, and hauling charges are less than they were one year ago, but with the exception of one or two markets no reduction has been made in the terminal market charges.

The large amount of local forage available in sections which are usually heavy buyers of hay from other sections is

probably an important factor and is one which is being made of great importance by the financial condition of the consumers who are using all substitutes available. Consumption, where it depends upon the activity of commercial enterprises, such as sawmills, lumber camps, coal and other mines, or construction camps, is very light. . . . There are numerous territories in which only a general return to normal conditions will bring the demand for hay back to normal."

A Plea for the Truck Horse

The suggestion of Major Church, transportation engineer of the Port of New York Authority, in favor of the creation of special motor truck highways to be equipped with stations and with the same regulations respecting traffic schedules as railways is very interesting.

His article would have been more interesting had he mentioned that it was his purpose to have these highways built by taxation. He proposes to create competition for the railways at the expense of the taxpayers; and the railways are among the heaviest taxpayers.

The more logical course would be to build a complete system of railways under the Port of New York Authority at the expense of the taxpayers; such railways will cost less than the very expensive type of motor roads which the Major proposes will last five times as long, and the engines, rolling stock, etc., required will cost much less because of their longer life and much slower depreciation; while the expense of transporting goods will be definitely less on account of the much larger loads which can be hauled.

If we must develop added transportation facilities for freight at public expense, by all means go the whole distance and build state-owned railways to reach every part of the city. . . . No city can give adequate service to its merchants and factories unless adequate freight and express terminals are provided. Short cartage hauls favor business by reducing delivery costs. Cities which provide numerous team tracks give their merchants and manufacturers a substantial advantage over cities not so well planned.

Boston with many wharves and team tracks has very few hauls that are not under two miles for the round trip, and Boston moves her enormous shipments of wool, leather, fish, vegetables, fruits, etc., at a very low cost. Seventy-five per cent of her merchandise is horse-drawn, and she enjoys the distinction of having the best lot of horses on the average of any city in America.

Philadelphia, with numerous wharves along the river and frequent team tracks, is also a city where merchants and manufacturers enjoy the advantage of short hauls, and here again we find keen appreciation of the economy of horses in such work.

Investigations covering six months—January 1 to July 1 this year—were made in New York, Philadelphia, Baltimore, Washington, Boston, Springfield, Hartford, New Haven, Lowell, Providence and other Eastern cities, and from studies, other surveys and figures furnished by firms who own and use 51,927 head of horses, we can say positively that on hauls within a horse's working radius, i. e., the distance a team can travel in a day, horses furnish more economical service than motorized equipment. This holds good on both straightaway, heavy duty hauls and on house-to-house delivery.

On local delivery work from store to store, or house to house, the evidence is overwhelmingly for horse-drawn equipment. Ice companies, coal companies, groceries, bakeries and milk companies agree emphatically with the great packing companies whose verdict is that on all hauls under twenty miles a day the horse is most economical.

The packers emphasize four fundamental features of horse use in their report—low initial investment, long life, low repair cost and moderate maintenance.—*Wayne Dinsmore in the New York Times.*

SAFETY FIRST—AND EARLY.—As our most lasting impressions and characteristics are formed in childhood, it is the duty of every parent and teacher to indelibly impress on the mind of the child never to walk along the tracks, and at railroad crossings to stop and look carefully in each direction before crossing. In all sincerity we ask every parent and every teacher to teach this lesson fervently and frequently.—*B. R. & P. Circular.*

Commission and Court News

Interstate Commerce Commission

The commission has suspended from January 24 until May 24, the operation of schedules which propose to increase the rates on common window glass, carloads, from Oklahoma and Arkansas producing points to Sioux Falls, S. Dak., from 46 to 49½ cents per 100 pounds.

In response to a resolution passed by the Senate at the instance of Senator Pittman of Nevada, the Interstate Commerce Commission has ordered a proceeding of inquiry and investigation regarding the organization, management and control of the Transcontinental Freight Bureau.

The commission has suspended until May 15 the operation of schedules which propose the establishment of increased and reduced rates on asphalt, road oil, etc., from points in Missouri, Kansas, Oklahoma and Arkansas to points in Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North and South Dakota and Wisconsin.

The commission has suspended until May 15 the operation of schedules published by the Duluth, Winnipeg & Pacific which propose increase and reductions in rates on prepared roofing, etc., between Chicago, Peoria, Ill.; St. Louis, Mo., and other points, and Mankato, Minn., and Hawarden, Ia., and points taking same rates, and from Duluth to Virginia, Minn.

The commission has suspended until May 11 the operation of certain schedules which propose to reduce to 14 cents per 100 pounds the present proportional carload rates of 19 cents per 100 pounds on petroleum and its products from Shreveport, La., and group points to Natchez, Miss., via the Louisiana & Arkansas, to Vicksburg, Miss., via the Vicksburg, Shreveport & Pacific, and to Baton Rouge, La., via the Louisiana Railway & Navigation Company.

The commission has suspended from February 15, until June 15, the operation of schedules which propose to establish reduced proportional class and commodity rates from Chicago, Ill., Ohio and Mississippi river points, and points taking same rates, to Gulf ports, New Orleans, La., to Pensacola, Fla., inclusive, and to South Atlantic ports, Jacksonville, Fla., to Wilmington, N. C., inclusive, applicable to shipside for transshipment via the Panama Canal to Pacific Coast points in the United States and British Columbia.

The commission has suspended from January 2, until May 2, 1922, the operation of schedules published by the American Railway Express Company, which propose the establishment of a rule in connection with its mileage scale of rates applicable on milk, cream, buttermilk and condensed milk between points west of the Mississippi river, except the Pacific Coast states, providing that where there are two or more routes between points of origin and destination the distance via the route actually used will determine the rate.

The commission has suspended from January 2, until May 3, 1922, the operation of schedules published by the New York, New Haven & Hartford, which provide that shippers are required to ice less than carload shipments of less than 5,100 quarts of buttermilk, condensed milk, cream, evaporated milk, milk, pot-cheese and skim milk moving between points on the New York, New Haven & Hartford and Central New England and from points on these lines to New York and vicinity in connection with the Erie, New York Central, and New York, Ontario & Western.

State Commissions

The Board of Railway Commissioners for Canada announces the appointment of R. Richardson as assistant secretary and registrar, and George A. Brown as assistant chief traffic officer; headquarters, Ottawa.

The Railroad Commission of California, on December 21, denied the application of the railroads of that state to increase freight rates on petroleum road oil.

The Public Utilities Commission of Michigan on December 28, assumed authority to fix the annual rentals that railroad companies charge for portions of their right-of-way, used by coal dealers, grain elevators, etc. Chairman Sherman T. Handy filed an order in the case of E. B. Muller & Company, of Port Huron, against the Pere Marquette, in which the commission refused to consider the contention of the railroad company that the act under which the state assumed to fix rates is unconstitutional. The order reduces the rentals on the Muller Company's stations at Elkton, Sandusky, McGregor and Deckerville.

Personnel of Commissions

The appointments of Henry C. Hall and Clyde B. Aitchison as members of the Interstate Commerce Commission were confirmed by the Senate on January 16, after a delay of over two weeks. Their terms expired on December 31 and pending confirmation they were retained by the commission as special examiners.

Court News

Automatic Bell Ringer Within the Inspection Act

The Circuit Court of Appeals, Seventh Circuit, holds that a bell ringer is a part or an appurtenance of a locomotive and tender within the Boiler Inspection Act, and that if an engine is equipped with an automatic ringer which is out of repair, a hand operated bell cord cannot be accepted as a substitute, especially where the hand operated bell is utterly insufficient.—Hines v. Smith, 275 Fed. 766.

Disregard of Signals by Taxicab Driver

The Wisconsin Supreme Court holds that a taxi-cab driver killed at a crossing in a city was guilty of contributory negligence, barring recovery for his death, where the signalman signaled him to stop about 80 ft. from the crossing and continued to signal him until he was forced to step aside to avoid being run over by the taxi.—Rowart v. Kewaunee, Green Bay & Western (Wis.), 185 N. W. 189.

No Lookout Duty Owing to Employee Off Duty

The Kentucky Court of Appeals holds that a railroad company owed no lookout duty to a member of a fencing crew housed in a bunk car on a side track, who was struck by a train as he was entering the car at night while off duty. To impose such a duty on the company would require it to maintain a lookout for its employees both day and night over practically all of its tracks.—C. N. O. & T. P. v. Brown (Ky.), 234 S. W. 455.

Automobile Drivers in New Mexico

The New Mexico Supreme Court holds that where one approaching a crossing in an automobile, according to his own testimony stopped, looked and listened at a distance of 57 ft. from the track, and did not thereafter again stop, look and listen, but drove upon the track, he is guilty of contributory negligence, and cannot recover for injury to himself or his car by collision with a train.—Morehead v. Atchison, T. & S. F. (N. Mex.), 201 Pac. 1048.

Employers' Liability—Federal Rule

of Damages Controlling

In actions brought in state courts under the federal Employers' Liability Act, the proper measure of damages to be awarded for ascertained future earnings must be settled according to general principles of law administered by the federal courts. The Supreme Court of the United States seems to have definitely decided that in such cases the sum to be awarded for the anticipated earnings of a decedent must be the present worth only of such earnings; that it is the duty of state courts to so direct the jury; and it has reversed the Kentucky Court of Appeals, for no other reason than that the state court failed to comply with the rule

of the federal courts in that respect. See *Chesapeake & O. v. Kelly*, 241 U. S. 485, 36 Sup. Ct. 630; *C. & O. v. Gadney*, 241 U. S. 494, 36 Sup. Ct. 633. For the same reason the Nebraska Supreme Court in two recent cases reversed judgments for the plaintiffs—*Sweat v. Hines* (Neb.) 184 N. W. 927. *Sheehan v. Hines* (Neb.), 184 N. W. 934.

Fences Not Required at Station Grounds

The Montana Supreme Court holds that Rev. Codes, § 4308, requiring fences and cattle guards, is not applicable to tracks at station grounds. Liability for injury to animals straying on the grounds depends on negligence in managing the trains. If the company does fence at places not required by the statute, there is no presumption that the fences constitute a trap for animals killed straying into the grounds, so as to make the company liable in the absence of negligence in moving the train.—*Bowers v. Chicago, M. & St. P.* (Mont.), 201 Pac. 825.

Safety Appliance Act—Car in Steel Company's Yard

A steel company's brakeman was injured attempting, under the orders of his yardmaster, to uncouple cars, one of which belonging to a railroad company, had no uncoupling lever. The brakeman, however, would not have been injured but for the steel company's engine being moved the wrong way by its employees' erroneous signal or failure to observe a signal. The Ohio Supreme Court holds that the railroad was not liable under either the federal or state Safety Appliance act.—*Loucks v. New York, Chicago & St. Louis* (Ohio), 132 N. E. 849.

Carrier Not Liable for Injury to Goods

Improperly Loaded by Shipper

In an action for damage to furniture alleged to be due to negligence in transportation, the Virginian Supreme Court of Appeals holds, citing the authorities, that where a shipper for purposes of his own convenience undertakes to load and unload the goods, the carrier is not responsible for injuries received in transportation traceable solely to improper loading and packing. In this case it was not the practice of the railroad to make inspection of carloads loaded by shippers. The court said that a different question would be raised if the improper loading were manifest to ordinary observation when the car was received. There was evidence proving that the furniture was not properly loaded and packed in the car by third parties employed by the shipper. There was ample evidence of the railroad's employees to overcome the presumption of negligent transportation arising from the arrival of the goods in a damaged condition, and to prove that damage would not have occurred if the car had been properly loaded and the goods properly packed. Judgment for the plaintiff was therefore reversed.—*Hives v. Buchanan* (Va.), 109 S. E. 219.

Service of Summons on Soliciting Agent Invalid

In a personal action in a federal court of Minnesota against the Union Pacific, a foreign railroad corporation operating no lines within the state, on a cause of action arising in another state, service was attempted to be made by delivering a copy of the summons to the company's soliciting freight and passenger agent at Minneapolis. The district court holds that the fact that the company maintains an office in the state with such an agent, who has, however, no authority to make contracts, issue bills of lading or passenger tickets, or to collect freight charges, does not constitute doing business in the state such as would validate the service.—*Stephan v. Union Pacific*, 275 Fed. 709.

Liability for Injuries Resulting From Quarrel

Two employees of a railroad, both engaged in shoveling coal, quarreled as one was quitting and the other starting for the day as to the amount of work done by each. In the course of the quarrel one, while leaving the premises, was struck by a lump of coal thrown by the other. In a proceeding under the Workmen's Compensation Act, the Indiana Appellate Court holds that the Industrial Board was warranted in finding that the applicant received his injury by an accident arising out of his employment;

this on the theory that the disagreement arose out of the employer's work in which both men were engaged.—Payne v. Wall (Ind. App.), 132 N. E. 707.

United States Supreme Court

Regulation as to Manner of Tendering Base for Lien Lands Within Power of Secretary of Interior

The Supreme Court of the United States has affirmed the judgment of the Court of Appeals of District of Columbia (263 Fed. 637), holding that under a railroad land grant (of the Southern Pacific), providing that when land is lost to the company for any of the reasons mentioned in the grant, other lands may be selected by the railroad in lieu thereof, "under the direction of the Secretary of the Interior," a ruling of the Secretary that land tendered as a base for lien lands must not be tendered in fractions of 40 acres, is a matter of administration, committed by Congress to the sound discretion of the Secretary, and as such not subject to the control of the courts. Mr. Justice Van Devanter said in part that "the regulation is merely an administrative measure designed to facilitate the examination and disposal of the selection lists and to be fair alike to the claimant and the government. It neither abridges the right of selection nor unreasonably obstructs its exercise, but on the contrary leaves the claimant free to select and obtain indemnity for all losses if only the lands available in the indemnity limits are sufficient for the purpose."—*Southern Pacific v. Fall*. Decided January 3, 1922.

North Dakota Excise Tax Held

Invalid as to Interstate Railroads

The Director General of Railroads and five railroad companies sued to enjoin the collection of a special excise tax assessed against each of the companies for 1918 and 1919 under the North Dakota tax law of 1919, c. 222. The companies were all organized under the laws of other states, and all own lines running into or through North Dakota. The lines during those years were all under federal control.

The taxing officers at first assessed the tax for 1918 against the companies by taking the value of their property within the state at that proportion of the total value of their stocks and bonds that the main track mileage within the state bears to the main track mileage of the entire line of each company, as prescribed in the second proviso of the statute. The United States Supreme Court held, however, that the tax so assessed was an unwarranted interference with interstate commerce and a taking of property without due process of law. *Wallace v. Hines* (1920) 253 U. S. 66. Thereupon the taxing officers assessed the tax for that year, and also for 1919, by using the ratio specified in the last preceding clause of the statute applicable to corporations in general—that is, a ratio fixed by contrasting the value of each company's railroad within the state with the value of its entire railroad within and without the state.

The validity of the tax on this new basis was challenged on the ground, among others, that as to railroad companies whose lines lie partly within and partly without the state the statute does not authorize or sanction a tax assessed on that basis. This contention is sustained by the Supreme Court, because of the above-mentioned proviso or excepting clause in the statute coming immediately after the clause relating to other corporations, providing that in the case of a railroad with lines running into or across the state, "property within the state shall be held to mean that proportion of the entire property of such corporation engaged in such business which its mileage within the state bears to its entire mileage within and without the state." Although this provision was held in *Wallace v. Hines* to be in conflict with constitutional limitations and indefensible as respects these railroad companies, it must still be regarded as part of the act for all the purposes of construing the remainder of the act. Therefore the taxing officers, on finding that the tax could not constitutionally be assessed on the basis specially prescribed in the statute, were not at liberty to assess it on another basis which the statute shows was not to be applied to railroads such as these. The tax was accordingly held invalid and its collection enjoined. *Davis v. Wallace*. Decided January 9, 1922. Opinion by Mr. Justice Van Devanter.

Labor Board Decisions

Right to Dismiss Section Foreman for

Inefficiency Sustained

In a case against the Texas & Pacific, the Labor Board sustained the action of the railroad in dismissing R. Phillip, section foreman, because he had not maintained his section properly.—*Decision No. 551*.

Carpenters Refuse to Aid in Strike Duty

Three carpenters on the Pennsylvania Railroad refused to work on bunk cars required by railroad police during the outlaw switchmen's strike in April, 1920. In a case involving the pay of these carpenters for the time not employed during the strike, the Labor Board held that the men were not entitled to it.—*Decision No. 517*.

Wage Increase to Painters

In a complaint by the United Brotherhood of Maintenance of Way Employees and Railway Shop Laborers against the Delaware, Lackawanna & Western, the Board held that painters were entitled to an increase of 15 cents an hour as specified in decision No. 2 and as covered in paragraph B of decision No. 92, effective March 1, 1920.—*Decision No. 518*.

Terminal Mileage Denied Enginemen

Operating Milk Trains

In a controversy between the New York, Ontario & Western and the men in engine service on milk trains the Labor Board decided that the article of the schedule on which the employees based their claim for terminal mileage, refers to passenger service only. Under the provisions of the schedule the engineers and firemen employed on milk trains receive freight service rates.—*Decision No. 482*.

Employees Discharged for Furnishing Infor-

mation for Railroad Labor Board Are Reinstated

Switchman and a fireman submitted information to their respective brotherhood executives that had been requested of the brotherhoods by the Labor Board. The Interstate Railroad requested these men to promise not to take up such questions with their brotherhoods in the future and on refusal the men were discharged. The Labor Board decided that the employees should be reinstated and paid for time lost.—*Decision No. 528*.

No Additional Compensation for

Clerical Employees for Saturday Afternoon

Twenty-nine employees of the Chicago, Milwaukee & St. Paul requested overtime for three hours' extra work on September 10, 1920, quoting Rule 57 of the agreements to substantiate their claim. The Board, in its decision, held that the last paragraph of Rule 57, upon which the claim was based, did not contemplate that clerical employees should be paid overtime for Saturday afternoons, but provided for a continuation of allowing employees to be off part of a day on certain days.—*Decision No. 468*.

Conductor Dismissed for Disobedience

of Operating Rule Denied Reinstatement

A train on the Bangor & Aroostook had passed a station without sufficient time to make the next station for a first-class train. The conductor discovered the error and stopped the train by applying the air from the rear. After the train was stopped a back-up signal was given to the engineer, and the train backed up to the south end of the passing track against traffic and without flag protection. The railroad discharged the

conductor for this infraction of the rules. The Labor Board ruled that while the permanent dismissal of the conductor was a severe penalty, the Board could not condone the violation of important operating rules or interfere with the management in the application thereof. The request for reinstatement was, therefore, denied by the Board.—*Decision No. 498.*

Seniority Rights for Less Than Six Months' Service

Three Italian track laborers on the Buffalo, Rochester & Pittsburgh were laid off in January, 1921, on account of reduction in force, and entered a complaint before the Labor Board because they were not allowed to displace other laborers junior to them in the service. They had been in the employ of the road less than six months. The Board decided that while it favors close observance of the seniority rule, it does not construe the provision of this agreement as making it compulsory for the carrier to regard seniority of employees until they have been in service six months. The complaint was, therefore, denied.—*Decision No. 523.*

Leaving Duty Without Permission

A. L. Callahan, yard foreman on the International & Great Northern at Fort Worth, Tex., was discharged for leaving his work and going to town at 3 p. m. on September 16, 1920, after having obtained permission from Roadmaster Grizzle for whom he was handling some work train service. The railroad contended that Callahan should have known that the permission of the roadmaster applied only so far as he was concerned personally and that Callahan had no right to leave without permission from the general yardmaster. The Labor Board refused to reinstate Yard Foreman Callahan or pay him for lost time.—*Decision No. 496.*

Enginemen's Request for Change

in Flagging Rules Denied

In a complaint against the Virginian Railway by the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen and Enginemen the employees requested that a special rule of that road to the effect that the enginemen of a following or incoming train is responsible for a collision at a station, coaling plant or water tank be rescinded. In its place the enginemen requested that the standing train be required to be protected by flagmen in accordance with standard rule 99. The carrier's contention that the promulgation of operating rules is solely a managerial question and that there is no reason for a change was sustained by the Board.—*Decision No. 488.*

Conductors' Claim for Switching Run Rate Sustained

For many years turn-around service has been operated between Elizabeth, Ga., and Tate (a distance 40 miles each way), and the mine—or switching-run rate of pay was applied thereto; but, effective May 30, 1920, this turn around service was discontinued and runs 17 and 18 were put on to operate in through-freight service between Elizabeth and Copperhill (95 miles). On June 27, 1920, they were made to run between Elizabeth and Blue Ridge (81 miles), and have been paid through-freight rates. It is the conductors' contention that these changed runs should still be paid the mine- or switching-run rates because of doing station switching.

It is the position of the carrier that switching of the kind cited should not be classified as mine- or switching-run work as covered by section d, Article IV of the existing agreement; that station switching by through-freight trains between terminals does not operate to change the classification of the service nor the rate applicable to through-freight service, as clearly indicated in the Director General's ruling cited above, and fully confirmed by subsequent decisions of the Railway Board of Adjustment No. 1.

The Labor Board decided that under the provisions of the schedule and the instructions issued when the straight-away runs were inaugurated, supplemented by the actual switching done at stations, the position of the employees is sustained.—*Decision No. 481.*

Foreign Railway News

Wage Reductions in Britain

Under the sliding scale of wages in Great Britain, whereby railway wages are increased or decreased in accordance with the cost of living index number, wage rates suffered a further decrease of from 2 to 6 shillings (\$.50 to \$1.50) per week, effective January 1, according to the Railway Gazette (London).

Private Companies May Operate French Railways

LONDON.

The French parliamentary committee appointed to inquire into the condition of the government railway services in France have recommended by a majority that these lines be handed over to a private company to be worked. The state will still remain the owner.

British Company to Build Locomotives in Austria

According to an Associated Press dispatch appearing in the New York Times, the Vickers-Armstrong Company, a British concern, has made an offer to the Austrian government for the Woellersdorf Arsenal. The British company, it appears, wishes to turn the arsenal into a plant for the manufacture of locomotives.

Rates Increased in Argentina

LONDON.

It is reported that the outcome of a meeting between the Minister of Public Works, of Argentina, representatives of commerce and industry in the regions affected and directors of the Entre Rios and the Argentine North Eastern railways, the former railway is to be allowed to increase its rates by 17 to 23 per cent and the latter company by 25 per cent. Passengers, livestock and oranges are excepted from the higher tariffs.

Russians Seek to Hold Chinese Eastern

John J. Oblomievsky, a Russian railway engineer, arrived in Washington recently to work for the preservation of Russian control over the Chinese Eastern. Mr. Oblomievsky, as reported in the daily press, said in part:

We hope that the Washington conference will remember that the Chinese Eastern Railway was built with money taken from the Russian people and that the loss of this railway to Russia would mean the cutting off of Siberia from the Pacific. We hope the conference will act as moral trustees of Russia at this time of her temporary disability. We trust that the conference will confirm the Russian-Chinese Treaty of 1896, and will call upon the Chinese Government to revise the private agreement of the Russian management of the railway with the Chinese Government, concluded on October 12, 1920, inasmuch as in some parts this agreement contradicts the fundamental treaty of 1896.

The recognition of the Russian legitimate rights in accordance with the treaty of 1896 would make it possible to establish the Council of Consuls in Harbin as a body that would supervise the execution of the treaty by both contracting parties. In this capacity the Council of Consuls would succeed the Interallied Technical Board, now in Harbin, which was organized only as a temporary body for the purpose of supervising various technical matters connected with the presence of the allied troops in Siberia. In order that the Chinese Eastern Railway could continue to function normally, it is necessary that an authoritative body be established able to regulate questions of general policy connected with the railway, and to supervise the execution of the Russian-Chinese Treaty.

The Chinese Eastern Railway is a part of the Transsiberian. For twenty years it operated with great yearly deficits, bringing the total Russian expense to about 500,000,000 gold rubles. Russia met the expense, looking upon the Transsiberian Railway as a means of bringing life, culture and prosperity to the vast spaces of Siberia.

During the 25 years of its existence millions of Chinese have settled in the railway zone and where there was at one time a vast wilderness. The treaty of 1896 gives China the right to

redeem the road after 36 years of operation, on repayment to Russia of all that the railroad cost her. According to another provision, the railway will pass into China's possession after 80 years of operation without any compensation on China's part.

Reduction in English Freight Rates

LONDON.

The decision of the English and Welsh railway companies in regard to the lowering of railway rates has proved very disappointing to business interests. The decision to limit the reduction of rates to coal, coke, patent fuel, iron and steel, limestone for chemical works and limestone used for iron and steel making has caused numerous comments from the British industries.

The reduction will operate from January 1, 1922, and will amount to 25 per cent of the present increase of 100 per cent. It is agreed among all the large associations of shippers that this limited concession can have little, if any, effect on a general trade revival. They are not in a position, however, to question the railway companies' statement that even this small concession will mean a reduction in railway revenue of £10,000,000 (\$48,600,000 at normal rate of exchange) a year, but they do state that this figure may easily be reduced by increase of traffic.

The railway companies in putting forward this reduction state that they would have been unable to face this reduction were it not that they look for relief at an early date from a further fall in the prices of materials and the automatic reduction of wages arising from the fall in the cost of living bonus.

Reorganization of the L. & N. W. and the L. & Y.

The London & North Western and the Lancashire & Yorkshire, as was briefly noted in these columns last week, will be consolidated on the first day of next year under a new scheme of organization. The new organization, which has been announced, embodies some novel features.

In accordance with customary English practice, the head of the system will be the general manager, Arthur Watson. Mr. Watson is at the present time the general manager of both companies, so that feature of the plan calls for no changes.

In general, the most distinctive feature of the new arrangement is the divisional organization. For operating and traffic purposes the combined railways are divided into two divisions, the Northern and the Southern. The former is made up of the entire Lancashire & Yorkshire and that part of the London & North Western lying to the north of Crewe. The Southern division is that portion of the London & North Western lying south of Crewe.

On the other hand, for engineering, mechanical and stores department services the combined carriers are divided into divisions A and B. Division A is the London & North Western as it now stands and division B is the Lancashire & Yorkshire as it now stands. Thus, while many changes are necessary in the operating and traffic departments, the present organizations of the engineering and mechanical departments of both roads are maintained in large part with, of course, a new authority placed above both of them.

Furthermore, the chief goods manager will cease to be an operating officer and will devote his attention entirely to duties similar to those of the freight traffic manager of an American railway. Details concerning the passenger traffic will apparently, however, continue to be handled by the operating department.

At the head of the Northern and Southern divisions are divisional general superintendents. Reporting to them will be, as suggested by the Railway Gazette (London), those officers responsible for passenger traffic work, the operation of trains and yards, the collection and delivery of freight, the operation of freight and passenger stations and the marine department.

The electrical department is combined with the mechanical and the head of the department will be known as the chief mechanical and electrical engineer.

Other changes are less striking.

Arthur Watson, the general manager, will have seven assistants. H. G. Burgess will be principal assistant and H. Marriott will be assistant to the general manager, parliamentary. Other assistants to the general manager will have charge respectively of rates and fares, general matters, staff, "indoor" and statistical.

The divisional general superintendents will be Ashton Davies for the Southern division and L. W. Horne for the Northern. The chief goods manager will be S. H. Hunt. Under him will be divisional goods managers on the Northern and Southern divisions.

The chief engineer, E. F. C. Trench, will have under him divisional engineers of divisions A and B, who will oversee all engineering and signal work.

The chief mechanical engineer, G. Hughes, will have under him two divisional mechanical engineers, H. P. M. Beames and G. N. Shawcross. Directly under him also will be divisional electrical engineers and the divisional carriage and wagon superintendents.

Poland to Permit Railway Construction

by Private Concerns

The Polish government will permit the construction and operation of railway lines by private concerns, but under such unfavorable terms that it may be of interest to follow the situation to see to what extent the opportunity will be taken advantage of. Some of these provisions are:

The company must secure the permission of the government before it can make preliminary surveys and studies.

The Minister of Railways decides upon the granting of the concession, depending upon his opinion regarding the desirability of the proposed railway and the financial and other arrangements advanced by the company. The company must assure the Minister of its ability to finance the project.

At the end of 99 years the railway so constructed, with all its buildings, real properties, rolling stock, etc., automatically become the property of the government—without compensation to the company.

The government may buy the railway at any time before the concession expires by the payment of a sum arrived at as follows: Average annual net income for the best 6 of the preceding 8 years (but not less than 4 per cent on the outstanding stock) capitalized at 5 per cent (if the concession has 20 years or more to run—otherwise the average annual net income multiplied by the years the concession has to run).

The government is not limited in granting concessions to other companies for lines connecting with the one to be built.

The Minister of Railways must approve the detailed construction plans. He will supervise the work of construction. He may order the construction of new buildings.

The company, upon the demand of competent authority, must rebuild any bridges or highways affected by its activities and, apparently, must provide overhead or subway structures for all highways.

The Minister may lower rates as he sees fit or allow the government to participate in profits over a certain amount.

The government has the right-of-way for telegraph and telephone lines along the railway.

The company will be required to transport postal parcels and employees free of charge and, when cars are provided by the postal authorities, handle and repair these cars at the company's expense.

The company must enter into such relations as to joint use of facilities or equipment as the Minister may require.

THE NATIONAL SAFETY COUNCIL, 168 North Michigan avenue, Chicago, is to compile a census of safety managers, superintendents, and all safety workers, and requests everyone who ought to be included in that census to send in the necessary data. Each individual should say how long he has been in his present position and what technical or special training he has had for it.

The principal points asked for are: Name; Company; City; State; Nature of company's business; Is safety your principal work? Whether or not engaged in other activities—fire protection, health and sanitation, workmen's compensation and claims, manager or superintendent, engineering (other than safety), legal, insurance, welfare, educational.

Equipment and Supplies

Freight Cars

THE UNION PACIFIC is inquiring for 70 double truck caboose cars.

THE FRUIT GROWERS' EXPRESS, Washington, D. C., will be in the market soon for 100 refrigerator cars.

THE NORFOLK & WESTERN contemplates carrying out an extensive program for the repair of coal cars.

THE ELYRIA ENAMELED PRODUCTS COMPANY, 101 Park avenue, New York City, is inquiring for 10 milk cars.

THE NORTHERN REFRIGERATOR CAR COMPANY, Milwaukee, Wis., has ordered 500 refrigerator cars from the Haskell & Barker Car Company.

THE CENTRAL OF GEORGIA, reported in the *Railway Age* of December 17, as inquiring for 500 box cars, has ordered this equipment from the Mt. Vernon Car Manufacturing Company.

THE LONG ISLAND, reported in the *Railway Age* of November 12, 1921, as inquiring for 10 caboose cars, has ordered 10 steel underframe caboose cars from the American Car & Foundry Company.

THE PACIFIC FRUIT EXPRESS, reported in the *Railway Age* of January 7, as about to ask for prices on refrigerator cars, is inquiring, through the Southern Pacific, for 3,000 refrigerator cars, also for 300 additional for replacement purposes.

Passenger Cars

THE LONG ISLAND, reported in the *Railway Age* of December 17 as inquiring for 40 motor cars for electric service and 10 steel coaches for steam service, has ordered this equipment from the American Car & Foundry Company.

THE CHICAGO & NORTH WESTERN, reported in the *Railway Age* of November 26, as inquiring for 9 baggage cars, 5 combination baggage and mail, 20 coach and 10 smoking cars has given an order for 45 steel cars for passenger train service, to the American Car & Foundry Company.

THE CHICAGO, BURLINGTON & QUINCY, reported in the *Railway Age* of November 26, as inquiring for 124 cars for passenger train service, has placed orders for 62 passenger cars and 12 dining cars with the Pullman Company and for 53 baggage and mail cars, with the Standard Steel Car Company.

Iron and Steel

THE GRAND TRUNK, Western Lines, has ordered from the Illinois Steel Company 9,500 tons of 100 lb. rail.

THE CHICAGO UNION STATION COMPANY, through Graham Anderson Probst & White, architects, are inquiring for approximately 15,000 tons of structural steel.

THE NEW YORK, NEW HAVEN & HARTFORD will receive bids until 12 o'clock, noon, January 31, 1922, at New Haven, Conn., for its requirements of steel castings, to be ordered as required during the year ending December 31, 1922.

THE "CONSCIENCE FUND" of the Southern Pacific has received since 1907, contributions ranging in amount from 3 cents to \$75, and aggregating altogether \$1,164. A resident of Bakersfield, Cal., sent \$1.53 to cover an additional amount due to the railroad, as the result of a 13-year-old boy riding from Fresno to Bakersfield on a half fare ticket. An employee in Los Angeles refunded \$5.13, which was a result of overcharges in his expense account. From Portland, Ore., a man sent 80 cents to defray the loss of two barrel covers owned by the company which he had thrown into the Marys river.

Supply Trade News

The Bird-Archer Company has moved its offices from 90 West street to 33 Rector street, New York City.

J. C. Donaldson has been appointed sales engineer of the Hall Switch & Signal Company, Garwood, N. J.

Fairbanks Morse & Co., Chicago, are transferring the marine engine department of the company from Three Rivers, Mich., to Beloit, Wis.

The Railways Ice Company, Chicago, will erect a two-story ice manufacturing plant at Clearing, Ill., 150 ft. by 300 ft., at an estimated cost of \$200,000, including machinery.

The Interstate Car Company, Indianapolis, Ind., is planning the erection of a one-story foundry for the production of iron castings, estimated to cost approximately \$25,000.

E. O. Schneider has been appointed representative in eastern Pennsylvania of the McDougall-Butler Company, Inc., Buffalo, N. Y. Mr. Schneider will have his headquarters at Philadelphia, Pa.

The Streets Company, Chicago, which has heretofore confined itself largely to the construction and repair of wooden freight cars, has issued an inquiry for certain equipment for the manufacture and repair of steel cars.

W. F. Cremeán, representative at New York, of the Wine Railway Appliance Company, Toledo, Ohio, has been appointed sales engineer, with headquarters at Toledo, and Peter P. Beck succeeds Mr. Cremeán as eastern representative, with office in the Grand Central Terminal, New York City.

Atlee B. Saurman, has been appointed general sales manager of the Standard Underground Cable Company with headquarters at Pittsburgh, Pa. Mr. Saurman has been connected for over 20 years with the company's New York, Boston, San Francisco and Philadelphia sales offices, having served successively as manager of the last three offices.

B. B. Milner, formerly engineer motive power and rolling stock of the New York Central, who for the past year has been with the Frazar importing-exporting interests, is returning to the Orient where he will establish his own practice as consulting sales engineer. A photograph of Mr. Milner and a biographical sketch appeared in the *Railway Age* of September 17, 1920, page 504.

The personnel of the executive staff of the Bridgeport Brass Company, Bridgeport, Connecticut, is now as follows: F. J. Kingsbury, chairman of the board; Carl F. Dietz, president and general manager; W. R. Webster, vice-president; F. J. Kingsbury, treasurer; R. I. Neithercut, secretary; W. D. Blatz, general sales manager; W. R. Clark, general works manager; E. G. Oakley, works manager fabricating division, and Arthur Brewer, works manager mill products division.

The Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., announces a number of changes and transfers in personnel in its railway sales department, the organization of which is now as follows: F. H. Shepard, director of heavy traction; M. B. Lambert, manager; E. D. Lynch, office manager; F. F. Rohrer, assistant to manager in charge of contracts; C. H. Long, section manager railway equipment contracts and orders; R. Seybold, manager price section; T. H. Stoffel, electric railway freight haulage export; W. R. Stinemetz, manager, and R. W. Carter, assistant manager of the heavy traction division; K. A. Simmon, manager, light traction division; J. L. Crouse, manager and J. W. Lewis, assistant manager, railway development and supply division; H. A. Campe has been appointed manager of the small motor appliance section of the industrial department, succeeding

V. M. Beeler, who has been transferred to the Springfield office. H. B. Smith has been appointed manager of the domestic service section of the department, succeeding Mr. Campe and G. L. Washington has been appointed to manager of the Havana, Cuba, office of the Westinghouse Electric International Company.

Pullman Company Reorganization

At a special meeting of the stockholders of the Pullman Company at Chicago, on January 14, the company was reorganized, following its absorption of the Haskell & Barker Car Company. John S. Runnells retired as president of the company and was elected chairman of the board of directors succeeding Robert T. Lincoln, and Edward F. Carry, president of the Haskell & Barker Car Company was elected president to succeed Mr. Runnells. Charles A. Liddle, vice-president of the Haskell & Barker Car Company and David A. Crawford, treasurer, were elected vice-presidents of the Pullman Company.

John Sumner Runnells was born at Effingham, N. H., on July 30, 1844, and was educated at Amherst College, graduating with the degree of A.B. in the class of 1865. During 1868, he served as private secretary to Governor Merrill of Iowa. From 1869 to 1871, he was consul at Tunstall, Eng., returning to this country during the latter year and being

to the vice-president and then to general manager, which position he resigned on January 1, 1916, to become vice-president of the Haskell & Barker Car Company, the position he occupied at the time of his recent appointment.

The Warren Tool & Forge Company, Warren, Ohio, has purchased the American Block & Manufacturing Company and the General Malleable Company, both of the same city. The American company manufactures malleable unions with bronze inserted seats, for the production of which the plant has a capacity of about 250,000 per month. The General Malleable Company manufactures malleable castings, a large proportion of which are used by the railroads and the total capacity for the production of which is about 600 tons per month. These companies will henceforth be operated as a part of the Warren Company, the capitalization of which under the merger is \$1,800,000. The company will continue to operate under the present management.

The Portland Cement Association, Chicago, has organized a railway bureau to compile and present authoritative data on railway uses of concrete. D. A. Tomlinson, who has been appointed manager of this bureau, was graduated from the Massachusetts Institute of Technology in 1912, following which he entered the engineering department of the Chicago



C. A. Liddle



E. F. Carry



J. S. Runnells

admitted to the bar. He practiced law at Des Moines, Iowa, from 1871 to 1887, during which time he was a reporter for the Supreme Court of Iowa, and later United States district attorney. In 1887, Mr. Runnells was appointed counsel for the Pullman Company, and, in 1905, was promoted to vice-president retaining his duties as general counsel. He was elected president in 1911.

Edward F. Carry was born at Fort Wayne, Ind., on May 16, 1867, and was educated in the public schools of that city. He began his business career with the Wells & French Car Company at Chicago, and at the time of the consolidation of this company with the American Car & Foundry Company, was serving as secretary. He served the last named company successively as district manager, first vice-president, second vice-president, and first vice-president and general manager, a service extending over a period of 28 years. On January 1, 1916, Mr. Carry was elected president of the Haskell & Barker Car Company, which position he occupied at the time of his recent appointment.

Charles A. Liddle, who has been elected vice-president of the Pullman Company, was educated in the public schools of Philadelphia, Pa., and entered business as an employee of the Allison Manufacturing Company at Philadelphia. Mr. Liddle later served the Jackson & Sharpe Company and the Harlan & Hollingsworth Company at Wilmington, Del., and the Pressed Steel Car Company at Allegheny, Pa. In 1901, he entered the service of the American Car & Foundry Company as an engineer. Later he was promoted to assistant

& Western Indiana. Five years later, while occupying the position of assistant engineer of that road, with headquarters at Chicago, Mr. Tomlinson enlisted in the army, serving as a captain in the coast artillery and instructor in railway artillery and orientation at the heavy artillery camp at Fort Monroe, Va. For the past two years he has been connected with the structural bureau of the Portland Cement Association, with headquarters at Chicago.

John M. Weir, whose resignation as chief engineer of the Kansas City Southern, to become general superintendent of construction of the National Boiler Washing Company, Chicago, was noted in the *Railway Age* of January 14 (page 210), was born in Ireland on July 31, 1879. He entered railway service with the Illinois Central in June, 1899, as a track apprentice and after occupying various positions, was promoted to resident engineer in charge of construction in March, 1907. Later he was concerned for a time with the construction of a small railway in Canada. After completing this work he returned to this country and entered the service of the St. Louis-San Francisco as assistant engineer at Springfield, Mo. Subsequent to 1908, he was made assistant engineer in the chief engineer's office in charge of construction of the Gainesville & Northwestern in Georgia and not long thereafter he entered the valuation department of the Chicago, Rock Island & Pacific. He served this company as assistant engineer of track of the Chicago terminal and as assistant engineer in charge of terminal valuation. In June,

1916, he was appointed division engineer of the Kansas City Southern, with headquarters at Pittsburg, Kan., and was promoted to chief engineer in March, 1917.

Harry Barrett Marshall, who for 13 years served as manager of the St. Louis branch of The Electric Storage Battery Company, Philadelphia, Pa., has been placed in charge of



H. B. Marshall

all railway sales work of the company. Mr. Marshall, who will be located at Philadelphia, has been associated with the company for the past 16 years. He graduated from the Armour School of Technology in 1905, and a few months afterwards, joined The Electric Storage Battery Company, serving in a clerical position at the Chicago branch. In 1909, he was appointed manager of the St. Louis branch, which position he held until his recent appointment in charge of all railway sales work. From the beginning of his association with the company, Mr. Marshall has devoted considerable time to the question of railway sales.

Alfred E. Pratt, sales engineer of the National Carbon Company, Inc., Cleveland, Ohio, has been appointed assistant manager of the railroad department with headquarters at Cleveland. Mr. Pratt was born at West Scarborough, Maine, December 11, 1887, and was educated at Mount Union College and Western Reserve University. After leaving college he spent two years in the maintenance of way department and signal construction on the western lines of the Erie Railroad. In October, 1909, he was appointed supervisor of signals of the Buffalo Creek Railroad at Buffalo, N. Y. In January, 1913, he became general signal foreman of construction with the Erie Railroad while automatic signals were being installed on four divisions. In November, 1916, he was appointed signal supervisor of the Buffalo division of the Erie Railroad and in April, 1917, was transferred to the Kent division with headquarters at Marion, Ohio. On March 1, 1918, he resigned to accept the position as sales engineer in the railroad department of the National Carbon Company.



A. E. Pratt

The New York Central Veterans' Association was formally launched at meetings held in New York City on Sunday, January 8, (about 2,000 persons being present), and on Wednesday, January 11. This local organization, as before announced, is intended to promote a better acquaintance between all classes of persons employed by this road in New York City and vicinity and northward as far as Albany; and is open to officers and employees of all ranks who have been in the service 15 years.

Railway Construction

ATCHISON, TOPEKA & SANTA FE.—This company will make repairs and alterations to its grain elevators at Argentine, Kan., at an estimated cost of approximately \$15,000.

CANADIAN PACIFIC.—This company, in conjunction with the Canadian National, is contemplating the construction of a union station at Peterborough, Ont.

CENTRAL OF GEORGIA.—This company which was noted in the *Railway Age* of December 3, page 1121, as receiving bids for the construction of a 500-ton concrete coaling station at Columbus, Ga., has awarded a contract for the work to the Ogle Construction Company, Chicago.

CHICAGO, BURLINGTON & QUINCY.—This company will receive bids until January 27 for the construction of an addition and alterations to its hotel and eating house at Cody, Wyo. The structure is to be two stories and of bishopric board construction.

CHICAGO UNION STATION.—This company plans to complete its passenger terminal at Chicago within two years.

FORT WORTH & DENVER CITY.—This company has awarded a contract to Joseph E. Nelson & Sons, Chicago, for the construction of a two-story brick hotel at Texline, Tex., estimated to cost \$75,000.

ILLINOIS TERMINAL.—The Interstate Commerce Commission has issued a certificate authorizing the construction of an extension from Le Clair to O'Fallon, Ill., 14 miles.

MISSOURI PACIFIC.—This company will construct a new passenger station, 24 ft. by 115 ft. of fireproof hollow tile and stucco construction with a slate roof, and reinforced concrete and hardwood floors, at Earle, Ark. A concrete foundation for this building has recently been completed by company forces, and it is expected that bids for the construction of the superstructure will be requested at an early date. The work is estimated to cost \$23,000.

NEW YORK CENTRAL.—This company has awarded a contract to the Walsh Construction Company, Syracuse, N. Y., for grade elimination at North Tonawanda, N. Y., to cost in the neighborhood of \$500,000. The work, which will eliminate two grade crossings involves a change of line and the contract includes track work, bridge work and grading.

NORFOLK & WESTERN.—This company has awarded a contract for a reinforced concrete coaling station, including mechanical equipment, to be constructed at Williamson, West Virginia, estimated to cost \$75,000, to the Roberts & Schaefer Company, Chicago.

NORTHERN PACIFIC.—This company, in conjunction with the Great Northern, is planning for extensive grade crossing elimination work in northeast Minneapolis, Minn. The preliminary plan which was prepared by the city and accepted by the companies provides for track elevation, including twelve bridges, which will accommodate from two to six tracks. The work is estimated to cost \$5,000,000 and, according to an ordinance recently passed by the city council, must be completed within five years.

WENATCHEE SOUTHERN.—This company which was noted in the *Railway Age* of December 24 (page 1286), as having been organized to construct a railroad from Wenatchee, Wash., to Kennewick, a distance of approximately 132 miles, has applied to the Interstate Commerce Commission for authority to construct this line.

WESTERN PACIFIC.—This company has been authorized by the State Railroad Commission of California to extend its San Jose branch across the Santa Cruz line of the Southern Pacific at College Park, Cal. This permission was granted after the above lines agreed to install an interlocking plant at that point which will be in operation on or about March 15.

Railway Financial News

BOSTON & MAINE.—Modification of Decree Opposed.—A resolution has been filed with the Massachusetts legislature upon petition of Edmund D. Codman, former president of the Fitchburg Railroad, in opposition to any modification of the decree relative to the control of the Boston & Maine by the New York, New Haven & Hartford.

The attorney general now has under consideration a proposal to modify the dissolution decree of 1914 under which the New Haven was ordered to divest itself of Boston & Maine control by sale of all Boston & Maine stock directly or indirectly owned by it. Pending such sale the stock was placed in the hands of federal trustees.

The Codman interests assert that the proposed modification would be prejudicial to the public interest and a grave menace to the interests of all individual shareholders of the Boston & Maine "by reason of the fact that the possibility of independent operation of the Boston & Maine would be eliminated and its financial restoration would become subordinated to the interests of the New Haven railroad whose solvency is far from certain."

CHICAGO & WESTERN INDIANA.—Asks Authority to Issue Bonds.—This company has applied to the Interstate Commerce Commission for authority to issue \$223,000 of consolidated mortgage 4 per cent bonds to be disposed of at par to lessee companies to retire and replace general mortgage bonds.

CHICAGO, BURLINGTON & QUINCY.—Authorized to Issue Bonds.—The Interstate Commerce Commission has authorized an issue of \$30,000,000 of first and refunding mortgage bonds under a proposed mortgage, to be sold at not less than 89½ per cent, for the purpose of reimbursing the treasury for expenditures for additions and betterments during the period from February 1, 1916, and January 31, 1921.

CHICAGO, MILWAUKEE & ST. PAUL.—Loan Approved.—The Interstate Commerce Commission on January 18 announced its approval of a loan to this company of \$25,000,000 for five years.

DAYTON, TOLEDO & CHICAGO.—Claim for Guaranty Period Denied.—The Interstate Commerce Commission has denied the claim of this company for a guaranty for the six-months guaranty period of 1920 on the ground that it is not subject to the guaranty provision provided in Section 209 of the Interstate Commerce Act.

DENVER & RIO GRANDE.—Protective Committee.—A protective committee has been formed for the 7 per cent cumulative adjustment mortgage bonds, due April 1, 1932, and for the holders of certificates of deposit of the New York Trust Company with respect to this issue. The committee consists of Richard Sutro, chairman of Sutro Bros. & Co., of New York; Thomas L. Robinson, vice-president of the American Exchange National Bank, and William Loeb, Jr., vice-president of the American Smelting and Refining Company. Samuel Untermyer is counsel and Harry Hoffman, of 120 Broadway, is secretary.

There are \$10,000,000 of the bonds outstanding, all of which are secured by a mortgage to the New York Trust Company as trustee. The company defaulted interest on the issue on October 1, 1921. The bondholders are asked by the committee to deposit their holdings not later than February 28.

GREAT NORTHERN.—Authorized to Abandon Line.—The Interstate Commerce Commission has issued a certificate authorizing the abandonment of a branch line from Northport to Rossland, Wash., 16.96 miles.

LEHIGH VALLEY.—New Directors.—Charles D. Norton and Edward S. Moore, both of New York, have been elected directors to succeed George F. Baker and William H. Moore. Mr. Baker, complying with a recent ruling of the Interstate Commerce Commission, chose to remain on the New York Central Board rather than that of the Lehigh Valley. William H. Moore resigned.

MIDLAND VALLEY.—Authorized to Issue Bonds.—The Interstate Commerce Commission has authorized an issue of \$363,000

of first mortgage 5 per cent gold bonds to be sold at not less than 75 or to be pledged as collateral security for short term notes.

MISSOURI PACIFIC.—Director Resigns.—Cornelius Vanderbilt has resigned as a director in compliance with the order of the Interstate Commerce Commission, noted in last week's issue of the *Railway Age*, page 196, which stated that Mr. Vanderbilt might remain on the Board of either the Missouri Pacific or the Illinois Central, but not on both.

NEW YORK, CHICAGO & ST. LOUIS.—Authorized to Issue Bonds.—The Interstate Commerce Commission has authorized an issue of \$1,008,000 series A and \$3,027,000 series B second and improvement mortgage 6 per cent gold bonds to be pledged as collateral security for a note to the director general of railroads and for short term notes.

NEW YORK, NEW HAVEN & HARTFORD.—Proposed Modification of Dissolution Decree.—See Boston & Maine.

SAN DIEGO & ARIZONA.—Authorized to Assume Obligation.—The Interstate Commerce Commission has authorized this company to assume obligation and liability in respect of \$600,000 of equipment trust certificates guaranteed by the Southern Pacific.

SOUTHERN RAILWAY.—Bond Offering.—A syndicate headed by J. P. Morgan & Co., and including the First National Bank, the National City Company, Harris, Forbes & Co., the Guaranty Company and the Bankers Trust Company, is offering \$30,000,000 6½ per cent development and general mortgage bonds maturing April 1, 1956 at 94½ and interest, to yield over 6.90 per cent. The development and general mortgage dated April 18, 1906, provides for a rate of 4 per cent. It is proposed to enter into a supplemental indenture providing for the obligation to pay the additional interest to increase the rate to 6½ per cent. The proceeds are to be used in liquidation of existing obligations and in reimbursement of capital expenditures. This issue was authorized by the Interstate Commerce Commission on January 14.

TERMINAL RAILROAD OF ST. LOUIS.—Authorized to Issue Bonds.—The Interstate Commerce Commission has authorized an issue of \$65,000 of general mortgage 4 per cent bonds in payment for certain real estate.

Additional Sales of Equipment Trust Certificates

The director general of railroads announced on January 12 that he had, with the consent of the President, confirmed additional sales, at par plus accrued interest, of railroad equipment trust certificates now held by the government, as follows:

To Salomon Brothers & Hützler and Kidder Peabody & Co., of New York:	
Atlantic Coast Line, 1925-1928, inclusive.....	\$1,701,200
To Cassatt & Co., of Philadelphia:	
Monongahela Railway Company, 1928-1935, inclusive.....	263,200
To Kuhn, Loeb & Co., of New York:	
Pennsylvania Railroad Company, 1923.....	3,894,000
To Freeman & Co., of New York:	
Colorado & Southern Railway Company, 1923-1935, inclusive..	910,000
Total amount of these sales is.....	\$6,768,400

The sales were arranged by Eugene Meyer, Jr., managing director of the War Finance Corporation. The total amount of equipment trust certificates sold by the government to date, at par plus accrued interest, is \$147,391,400. The figures given in the last announcement, plus the sales given above, aggregate \$142,401,100, the difference being due to the advance payment of January 15, 1922, maturities by certain roads since the date of the last announcement.

Additional sales were announced on January 17 as follows:

To Poe & Davies, Baltimore, Indiana Harbor Belt, 1928 to 1935, inclusive	\$314,400
To Continental & Commercial Trust and Savings Bank, Chicago, Pennsylvania, 1927.....	3,894,000

This increases the total amount of equipment trust certificates sold to \$164,226,100.

Dividends Declared

Central of New Jersey.—\$2, quarterly, payable February 1 to holders of record January 27.

Huntington & Broad Top Mountain R. R. & Coal Co.—Preferred, \$0.50, payable February 15 to holders of record February 1.

Mine Hill & Schuylkill Haven.—\$1.25, payable February 1 to holders of record January 14.

Railway Officers

Executive

Will Hartwell Lyford, whose election as vice-president and general counsel of the Chicago & Eastern Illinois, with headquarters at Chicago, was announced in the *Railway Age* of



W. H. Lyford

January 7 (page 162), was born at Waterville, Me., on September 15, 1858. After being graduated from Colby College in 1879, he entered railroad service on July 15 of that year as an assistant engineer on the Chicago & Eastern Illinois. He worked in this capacity until 1881, at which time he was made stenographer to the general superintendent, holding that position until 1882, when he was promoted to chief clerk to the general manager at Chicago. From 1883 to 1884 he was claim agent with the same head-

quarters. After being admitted to the bar in 1884, he was promoted to assistant general solicitor, which position he held until 1888, when he was appointed attorney in charge of the law department. He was promoted to general counsel on March 15, 1892, and to vice-president and general counsel for the receivers in December, 1920, which position he was holding at the time of his recent election.

John W. Platten, whose election as chairman of the board of directors of the Chicago & Eastern Illinois, was announced in the *Railway Age* of January 7 (page 162), was born at



J. W. Platten

Port Perry, Ontario, and was educated in the public and high schools of that city. He began his business career in a bank at Toronto and came to the United States in 1888 to a position in the office of the assistant general passenger agent of the New York, Pennsylvania & Ohio (the Erie) at Cleveland, O. In 1889, he went to New York and entered the office of the second vice-president and general manager of the Erie. During the period of fifteen years which Mr. Platten served with the

Erie in New York, he was successively chief clerk in the insurance department, chief clerk in the operating department, assistant purchasing agent and, finally, treasurer. In 1903, he left the Erie to become assistant to the president of the Lehigh Valley, having charge of the financial, accounting and purchasing departments. In 1904, he was promoted to second vice-president of that company but left that position in 1905 to become vice-president of the United States Mortgage & Trust Company. In 1910 he succeeded to the presidency of this company which position he still holds. Mr.

Platten is also the chairman of the board of directors of the Gulf, Mobile & Northern and the Meridian & Memphis and is an officer and director of a number of companies. He has acted as chairman of various reorganization committees of several transportation companies.

Financial, Legal and Accounting

Robert S. Henry, whose appointment as associate counsel and director of public relations of the Nashville, Chattanooga & St. Louis, with head-



R. S. Henry

quarters at Nashville, Tenn., was announced in the *Railway Age* of December 10 (page 1178), was born at Clifton, Tenn., on October 20, 1889. He was graduated from the law school of Vanderbilt University in 1911. Mr. Henry entered railroad service on December 1, 1921, when his recent appointment became effective.

J. E. Taylor has been appointed general attorney of the Kansas, Oklahoma & Gulf, with headquarters at Muskogee, Okla. He will

have supervision over the legal and claim departments.

William King has been appointed freight claim agent of the New York, New Haven & Hartford with headquarters at Boston, Mass., succeeding **J. A. Beahan** who has been promoted to assistant general freight agent.

Operating

Henry Flanagan has been appointed trainmaster of the St. Paul division of the Northern Pacific, with headquarters at Minneapolis, Minn., succeeding **F. L. Birdsall**, transferred.

G. E. Dornblaser, assistant division superintendent of the St. Louis-San Francisco with headquarters at Sapulpa, Oklahoma, has been promoted to superintendent of terminals with headquarters at West Tulsa, Okla.

Traffic

R. P. DeCamp has been appointed assistant coal traffic manager of the Illinois Central, with headquarters at Chicago.

Alan McMichael has been appointed coal freight agent of the New York Central, Lines East, with headquarters at New York.

H. L. Carey has been appointed general freight agent and auditor of the Sabine & Neches Valley, with headquarters at Deweyville, Tex.

J. Noble Snider has been appointed coal traffic manager of the New York Central Lines East, with headquarters at New York, succeeding **G. N. Snider**, resigned.

R. C. Hicks has been appointed traffic manager of the Georgia & Florida with headquarters at Augusta, Ga., succeeding **J. A. Streyer**, resigned to engage in other business.

R. E. Buchanan, division freight agent of the St. Louis-San Francisco, with headquarters at Memphis, Tennessee, has been promoted to general agent, with the same headquarters as heretofore.

Arthur J. Chouinard, traffic manager of the Wabash, Chester & Western, has resigned from the service of that company effective January 15, to take charge of the sales

organization work at Rockford, Illinois, for the Petroleum Motors Corporation.

Arthur B. Smith, general passenger agent of the New York, New Haven & Hartford, with headquarters at New Haven, Conn., has been appointed passenger traffic manager of the Northern Pacific, with headquarters at St. Paul, Minn., succeeding **A. M. Cleland**, who has retired after 31 years of service with that road.

C. W. Andrews, traveling freight agent of the Chicago, Burlington & Quincy, with headquarters at Chicago, has been promoted to general agent, with headquarters at Indianapolis, Ind. **E. E. Morris**, chief rate clerk in the freight traffic department at Chicago, has been promoted to commercial agent, with headquarters at Paducah, Ky.

W. F. Knobeloch, whose appointment as assistant general freight agent of the St. Louis Southwestern, with headquarters at St. Louis, Mo., was announced in the *Railway Age* of December 10 (page 1178), was born at St. Louis, Mo., on March 31, 1888. He entered railroad service on May 15, 1905, as an office boy in the freight traffic department of the St. Louis Southwestern, since which time he has progressed through various promotions in that department to his present position.

C. J. Nelson, commercial agent of the Chicago, Burlington & Quincy, with headquarters at Paducah, Ky., has been promoted to general agent, with headquarters at Herrin, Ill. Mr. Nelson was born on a farm in Madison County, Iowa, on September 1, 1887. He entered railroad service in May, 1905, as a telegraph operator on the Chicago Great Western, which position he held until the following year when he left to become manager for the Western Union Telegraph Company at Fairfield, Iowa. He had worked at this position but a short time when he entered the service of the Chicago, Burlington & Quincy, as an operator, later becoming both operator and station agent at various points on the main line in Iowa, in which capacity he worked until May, 1912, when he was promoted to traveling freight agent, Iowa lines, with headquarters at Burlington, Iowa. During the war he was granted a leave of absence in order that he might serve with the Inland Traffic Service Bureau of the War Department. After having been two years engaged in this work he returned to the Burlington as commercial agent, with headquarters at Paducah, Ky., which position he was holding at the time of his recent promotion. His new duties give him jurisdiction over all matters pertaining to traffic in his territory with particular reference to coal traffic.

Mechanical

C. H. Norton has been appointed master mechanic of the Susquehanna and Tioga divisions of the Erie.

Wm. N. Nelson, mechanical engineer of the Minneapolis, St. Paul & Sault Ste. Marie, with headquarters at Minneapolis, Minn., has been appointed mechanical engineer of the Kansas City Southern, with headquarters at Pittsburg, Kan., succeeding **E. P. O'Connor**, assigned to other duties.

C. T. Ripley, general mechanical inspector of the Atchison, Topeka & Santa Fe, with headquarters at Chicago, has been promoted to the newly created office of chief mechanical engi-

neer, with the same headquarters. **H. H. Lanning**, assistant mechanical engineer, with headquarters at Topeka, Kan., has been promoted to mechanical engineer with the same headquarters.

Engineering, Maintenance of Way and Signaling

N. F. Brown, assistant to the chief engineer of the Pennsylvania, has resigned to become vice-president of the Dravo Contracting Company, Pittsburg, Pa.

George T. Anderson, roadmaster of the Kansas City Southern, with headquarters at Spiro, Okla., has been promoted to the newly created position of general roadmaster, with headquarters at Texarkana, Tex., his jurisdiction extending over the engineering and roadway departments. The position of division engineer at Texarkana, Tex., has been abolished. Mr. Anderson has also been appointed general roadmaster of the Texarkana & Fort Smith, a subsidiary line, and the position of chief engineer of that road has been abolished.

Arthur Nelson Reece, whose appointment as chief engineer of the Kansas City Southern, the Poteau Valley and the Arkansas Western, and consulting engineer of the Texarkana & Fort Smith, with headquarters at Kansas City, Mo., was announced in the *Railway Age* of January 14 (page 210), entered railroad service in June, 1903, after having studied civil engineering at the University of Kansas for three years. He was successively chairman, rodman, draftsman and instrumentman on the Atchison, Topeka & Santa Fe from June, 1903, to April, 1905. From the latter date until March, 1911, he was instrumentman, inspector on building construction, assistant engineer and chief clerk to the general superintendent of the St. Louis-San Francisco. He entered the service of the Kansas City Southern in March, 1911, as assistant engineer. He left in November, 1912, to become chief engineer of the Hanna & Hickey Construction Co., Fort Worth, Tex., re-entering the service of the Kansas City Southern in November, 1913, as office engineer, with headquarters at Kansas City. He was later promoted to division engineer with headquarters at Texarkana, Tex., which position he was holding at the time of his recent promotion.

C. B. Brown, Jr., who has been appointed engineering assistant to the vice-president of the Canadian National, was born on August 27, 1879, at Ithaca, N. Y. He was educated at Cornell University, from which institution he was graduated in 1901 with a degree in civil engineering. He began his railroad career at once as a draughtsman and rodman for the Canadian Pacific at Trail, B. C. The following year he became assistant engineer in the bridge department. He was next, until 1904, resident engineer on the Ontario division. In 1906 he was promoted to division engineer at St. John, N. B. In 1908 he was transferred in a similar capacity to Montreal. Four years later he became principal assistant engineer, Eastern lines, with headquarters at Montreal and the following year was appointed chief engineer of the Canadian Government Railways with headquarters at Moncton, N. B. In 1917 he was appointed assistant general manager, Eastern lines, in addition to his duties as chief engineer, relinquishing the latter title in 1918. The Canadian Government Railways had now become the Eastern lines of the larger Canadian National system and Mr. Brown remained as chief engineer of these Eastern lines until his appointment as engineering assistant to the vice-president of the entire Canadian National system.

Obituary

James H. Glynn, general agent of the Southern Pacific, with headquarters at Boston, Mass., died at his home in Dorchester, Mass., on December 31.

George T. Boggs, who was vice-president, assistant secretary and assistant treasurer of the Chicago, Rock Island & Pacific in 1911, when he retired, died in New York on January 16 as the result of an operation.



C. J. Nelson